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The Institute of Transport

THERE is no other platform than that provided by the Institute of Transport from which it would be appropriate to read three such papers as those at the Leeds Congress, opened under the presidency of Mr. William Whitelaw on Wednesday and to be concluded to-morrow. In the first, Mr. C. A. Lambert outlined the transport requirements of industry, while Dr. Fenelon, in the second paper, gave a useful survey of how passenger transport outside London is controlled. Abstracts of these papers will be found on pages 1020 and 1037 of this issue. To-day Professor J. H. Jones is to present his paper on the price issue in public utility and monopolistic industries, and next week we hope to publish an outline of his ideas, together with that of the members who will have taken part in the discussions of all three papers. Not so many years ago our predecessors might have derided the idea of listening to papers on such subjects; to-day the matters discussed are of the greatest importance. It is a sign of the times that two of the authors are professional economists, and, in providing the ground for discussing these matters, the Institute of Transport justifies its existence. Not, of course, that there is no other ample justification for the Institute. Within its scope it permits of discussion on a common ground between the administrators of every form of transport, and of every department of every form. Those responsible for rail, road, water and air transport meet to sink their differences and pool their experience. The mechanical engineer similarly confronts the traffic man; the accountant can see through the same glasses as the commercial manager. And—no less important that these invaluable facilities—the education of the budding transport administrator is encouraged and directed. The Institute of Transport indeed performs a useful function to-day.

An Inquisitor at Large

With a fanfare of journalistic trumpets, an intrepid reporter has lately been despatched from the offices of a Sunday newspaper to explore that *terra incognita*, the British railway. It is his mission to discover the laughter and tears behind every ticket, the Pagliacci in every passenger. We think it a pity that the press should thus exert itself to seize the last strongholds of the imagination. A railway journey is one of the few remaining entertainments in which one is ignorant of the private lives of the actors. To speculate in this direction, to scowl in secret at one's neighbour and privily to drop cigarette ash upon his trousers because he reads the organ of an obnoxious political party and may one day be Chancellor of the Exchequer—these are among the pleasures of the train. Besides, most of us have no more dramatic motives for travelling than those which inspired the chicken to cross the road in the conundrum. We are not, and do not wish to become, such stuff as news is made of. But in the first articles of the journalist in question there is evidence of our readiness to oblige. A restaurant car steward regaled him with the story of a certain peer who travels regularly to Scotland and beguiles the time with a piece of knitting. The sport of ragging the reporter may yet become a recognised railway diversion.

* * * *

The Week's Traffics

A general decline in passenger train traffics of the four group companies for the past week is accounted for by the fact that they compare with those of a week in 1933 which included Whitsunday and the two previous days on the London Midland & Scottish, Great Western, and Southern Railways, and the two days preceding Whitsunday on the London & North Eastern. The Irish railway traffic week ends on a Friday, and comparisons in the case of these railways for the past week are with a more or less normal period in 1933. Goods traffics are up on all three railways and passenger train receipts except on the Belfast & County Down. The Great Northern increase for the year to date is £145,050, the Great Southern aggregate increase being £50,966.

	22nd Week				Inc. or dec.
	Pass &c.	Goods, &c.	Coal, &c.	Total.	
L.M.S.R.	—132,000	+ 46,000	+ 5,000	— 81,000	+ 1,220,000 + 5.32
L.N.E.R.	— 56,000	+ 8,000	+ 39,000	— 9,000	+ 1,346,000 + 8.14
G.W.R.	— 44,000	+ 17,000	+ 2,000	— 25,000	+ 337,000 + 3.51
S.R.	— 72,000	+ 5,000	+ 3,000	— 64,000	+ 192,000 + 2.56
	*	*	*	*	

Recreations and Railway Revenue

It is inevitable that the public taste in entertainment should be reflected in railway traffic receipts and in the volume or nature of the business offering at stations. The considerable decline in favour, for instance, of the theatre and music-hall, has produced a serious diminution in the revenue derived from the conveyance each week of scores of large and small companies together with their vast and heterogeneous collections of scenery and properties. The loss has not been compensated for by the tremendous growth in popularity of the cinema, for although this contributed to increased passenger traffic in its early days, the present abundance of picture houses is such that a train journey is rarely necessary in order to visit one. Parcels traffic by express passenger train has profited in some measure from the conveyance of films, but the exhibitor's adjectives "stupendous" and "magnificent" are poorly supported from the railway point of view by the limited dimensions of even a super-production in the raw. The attractions of dog and dirt-track racing are unfortunately mainly local, although greyhound racing has created a special service on certain nights between Marylebone and Wembley Stadium on the L.N.E.R.

Football crowds are probably the railway's best standby, but generally speaking the recent growth of cheap entertainment has not yielded the revenue that could have been expected of it.

* * * *

The Universal Provider

Probably the idea of equipping the railway station as a species of "general store" originated west of the Atlantic, but by degrees it is spreading to this side, and the railway terminal is developing by degrees into a city in miniature. At St. Lazare terminus in Paris, for example, you can quench your thirst, satisfy your appetite, have your hair Marcel-waved or your nails manicured, your shoes repaired, your clothes cleaned and pressed—how you pass the time during the last-mentioned operation is not stated—your eyes tested, your visiting cards printed, and your films developed. Books, flowers, hats, dresses, porcelain, radio sets, and almost any other object under the sun may be purchased on the station premises. For your correspondence a writing-room is provided, and for the transaction of your financial affairs a bank, together with telephones for communication not merely with Paris, but at will with London, Brussels, or even New York. To pass your time you may patronise a news-reel cinema, like that at Victoria station in London, with the noiseless reminder from time to time, on the screen, that "the train for — is leaving in ten minutes." By the operation of unseen light rays, the cinema doors will courteously open in front of you and close behind you, with no assistance on your part. In fact, you can do practically everything but confess your sins, for the only lack on the station is that of a church.

* * * *

A Church Train on the L.N.E.R.

The L.N.E.R. still maintains a time-honoured custom of the late North British Railway by running a "church train" every Sunday morning from Riccarton Junction, on the Waverley route between Carlisle and Edinburgh, to Hawick or Newcastle. Riccarton is itself a creation of the North British Railway, which authorised the erection of houses, a post-office and a school for the benefit of its employees stationed in this remote spot. The provision of a church and living, however, fell rather outside the scope of a railway company, so the N.B.R. established the weekly church train. This runs to-day, as it did then, to Hawick and Newcastle alternately, enabling the residents to worship and call upon their friends in the lowlands. It leaves Riccarton at 10.15 a.m. and runs one Sunday southward to Newcastle, calling at Steele Road and returning at 1.30 p.m. The next week it travels northward over Whitrope summit, calling at the siding there, and then down to Hawick, which is reached at 10.50 a.m. and left at 1.15 p.m. The distance from Riccarton to Hawick is 13 miles and to Newcastle eight miles. Although not advertised in the published timetables, the church train conveys ordinary local passengers on each journey, as well as members of the railway staff and their families.

* * * *

The Fastest Train in the World

In these days of constantly-rising railway speeds the title of "fastest in the world" inevitably changes hands at frequent intervals, but so far as long-distance trains are concerned, the Sud Express of the Paris-Orléans-Midi Railways of France appears for the moment to hold it beyond much fear of dispute. For the first time in railway history an express has been booked to cover a distance of over 300 miles at a speed of over a mile-a-minute inclusive

of stops; the time now allowed the Sud Express from Paris (Quai d'Orsay) to Bordeaux is 355 min. for the 362 miles, with four stops between. Of the intermediate stages the most remarkable is that from Poitiers to Angoulême, where precisely one hour is allowed for a distance 70·0 miles, thus introducing the first 70 m.p.h. booking into France. and, so far as concerns steam-hauled trains, taking second place only to our Cheltenham Flyer. This follows schedules of 60·2, 66·9, and 60·8 m.p.h. over the three preceding stages—Paris to Les Aubrais, on to St. Pierre-des-Corps, and from there to Poitiers respectively—but the final stage from Angoulême into Bordeaux is booked at 57·6 m.p.h. only, probably to allow some small recovery margin in the event of the train running late. Another French record is established by the 9.9 a.m. express of the Est Company from Nancy to Paris, which now covers the 219·0 miles non-stop in 216 min.—to our knowledge the first example of a non-stop journey of over 200 miles booked at an average speed in excess of 60 m.p.h.

* * * *

Interurban Railways in the U.S.A.

For many years past the interurban railway, a development over long distances of the electric tramway, has been a feature of transportation in the North American continent. In face of the devastating competition of the road motor coach, there is now a tendency for these independent lines to disappear, though many thousands of miles of interurban tracks are still in successful operation. Some of the interurban companies have the dimensions of full-size railways, such as the Indiana Railroad system, which owns 770 miles of line, over which observation and parlour cars are run, or the Illinois Terminal RR., over whose 172-mile main line from St. Louis to Peoria even "trolley" sleeping cars are in service. High speed is a feature of certain interurban services, such as those of the Chicago, North Shore & Milwaukee RR., the fastest of whose limited trains cover the 74·1 miles between Harrison (Milwaukee) and Howard Street (Chicago) in 68 min., inclusive of three intermediate stops, and carry parlour and dining cars. Freight also is carried in many cases; for example, it is possible to consign freight by trolley services from Cleveland to Chicago, Cincinnati, Indianapolis, Milwaukee, and in many other directions. Until several years ago, the New York State Railway system was the largest of these concerns, operating some 3,500 miles of line, including the extensive tramway systems of Utica, Syracuse, and Rochester, but to-day all its interurban lines have been abandoned. Further details of American interurban services appear on p. 1024.

* * * *

Kowloon-Canton Railway (British Section)

On the 22 miles of the British section of the Kowloon-Canton Railway, which runs northwards from the terminal stations of Kowloon opposite Hong Kong to meet the Chinese Section of 89 miles, the results for the year 1933 showed a great improvement on those for 1932. Net operating revenue amounted to the exceptional figure of \$711,052 (which is irrespective of loan interest and sinking fund charges), representing a return of 3½ per cent. on the total capital. Both gross and net revenue receipts were the highest on record, and increased earnings were derived from every source of traffic except local goods. The track, both on the British and Chinese sections, was well maintained and enabled the accelerated time-table introduced in November, 1932, to be continued. Local passenger traffic showed the remarkable increase of 43·2 per cent. in receipts, due partly to the increase of 15·5 per cent. in numbers and partly to more travel in the higher classes. There was an encouraging advance of 12·7 per cent. in

receipts from through and joint sectional passenger traffic resulting from the improved service of through trains. A fast through goods service, hauled by British section engines, was inaugurated in October and was well patronised, but through goods traffic as a whole, though an improvement on 1932, was disappointing.

* * * *

The German State Railway and Unemployment

To provide work for some of her unemployed, Germany is spending many millions more than is strictly necessary merely to keep her railways running efficiently. The far-reaching and well-conceived programme that has been drawn up is outlined on page 1036, and when it is completed important operating economies should be possible. For an ever decreasing input of energy, a better and better service will be provided for the public. New locomotives are being built, electrification extended, the permanent way strengthened and improved in alignment, so that higher speeds will be possible at no increase—probably an actual decrease—in the consumption of energy, whether derived from manual labour or power. Containers are being developed along with mechanical methods of handling goods. The immediate effect is to create considerable industrial activity in producing these various labour saving devices; the eventual effect, of course, will be to save labour. By that time doubtless some more logical method of dealing with the unemployment problem will be found, for instance the digging of holes and filling them up again, or the intensive *sabotage* of machinery.

* * * *

Importance of Stable Roadbed

Under the chairmanship of Dr. A. N. Talbot, the Joint Committee on Stresses in Tracks of the American Railway Engineering Association has, during the past twenty years, issued six reports containing valuable data on the subject. Dr. Talbot has supplemented these reports by lectures, the latest of which was delivered on March 13 and is abstracted in the *Railway Age* of May 12. The term "modulus of elasticity of rail support" is used to express the relation between the magnitude of a load applied all along the rail and the magnitude of the resulting depression or vertical movement of the rail. In other words, it is a measure of the stiffness of the rail support or substructure below the rail. Tests have shown that the rail depression for a group of closely spaced wheels varies only slightly with the size of the rail, whether 90 lb. or 130 lb. per yd. The depression under the main driving wheel is very nearly inversely proportional to the modulus of elasticity of the rail support, regardless of the stiffness of the rail itself. Tests carried out a few months ago on the concrete roadbed of the Pere Marquette Railway and on the well-ballasted ordinary track alongside (the two form a double line) indicated a stress of 15,000 lb. per sq. in. in the base of the rail on the latter, and only from 3,800 to 6,800 lb. in the former, depending upon the type of bearing strip between the bottom of the rail and the concrete bed.

* * * *

Locomotive Pioneering

A fact of unusual interest, pointed out to us by the designer, is that Mr. Gresley's new Mikado locomotive *Cock o' the North*, which is the first express locomotive built for British service with eight coupled wheels, carries the same number, 2001, as the first locomotive built for express service in this country with six-coupled wheels. The latter was No. 2001 of the late North Eastern Railway, designed by Mr. Wilson Worsdell and built at Gateshead Works in 1899. Six-coupled freight locomotives had doubtless been used previously on passenger trains in this

country, and Mr. David Jones, on the Highland Railway, had set the fashion in 1894 with the 4-6-0 wheel arrangement, but the latter was intended principally for freight service; Worsdell's 4-6-0 of 1899, however, was unquestionably the first British engine, of this or any other six-coupled wheel arrangement, definitely intended for express passenger work. Now, thirty-five years later, by a purely fortuitous circumstance—for the coincidence of numbering, we understand, has taken place more by accident than design—the lineal descendant of the North Eastern Railway produces the pioneer eight-coupled engine for express service. Incidentally, we commend the practice of beginning the numbering of a class with a "1" rather than "0," e.g. 2001, rather than 2000, for then the highest number carried indicates the total in the class.

* * * *

Locomotive Mileage Statistics

Our American contemporary the *Railway Age* recently summarised the report on locomotives prepared under the direction of Mr. Joseph B. Eastman, Federal Co-ordinator of Transportation in the U.S.A. Among other questions, that of locomotive mileage was investigated, and the actual figures made on the Class I main line railways during the August-September peak period, 1933, by the 26,583 locomotives in service were tabulated. Replying to the detailed questionnaire addressed to them, the railways estimated that the average daily performance by these engines of 2,505,000 miles during this period could be increased to 3,506,000 miles by raising the average daily mileage of each engine from 94.2 miles to 131.9 miles. Withdrawing 4,640 locomotives from storage would provide for another 534,000 locomotive-miles a day and repairing 9,604 engines allow a further daily mileage of 977,000, which brings the total up to the daily average of 5,017,000 locomotive-miles, a general average of 122.9 miles a locomotive day. Among the thirteen types of engines each numbering over 1 per cent. of the total main line locomotive inventory, the 2-8-0, 4-6-0, 2-6-0, 4-4-2, 2-6-2 and 4-4-0 are as a whole now obsolete. The average age of these locomotives ranges from 25.9 years for the 2-8-0 to 34.2 years for the 4-4-0.

* * * *

The 2-8-0 in Service

The report mentioned in the foregoing note goes on to say that the most numerous single type of locomotive in the inventory is the 2-8-0, of which there are 11,266. During August and September, 6,681 of these engines averaged 411,000 miles daily. By more intensive utilisation, they are estimated to be capable of averaging 652,000 a day. By withdrawing 1,215 of this type from storage and repairing 2,818, an additional 313,000 miles are to be secured from the group, which is in all to produce 965,000 miles of the 5,000,000 daily peak. The 2-8-0 group is thus to contribute an increase of 134 per cent. on its service in August and September last, whereas that including the most modern types of locomotives is to contribute an increase of but 53 per cent. Particulars of the work of more modern engines are also included in the report. The group of types each constituting less than 1 per cent. of the total includes 2,108 locomotives, of which 1,272 are of the 2-8-4, 4-6-4, 4-8-4 and 2-10-4 types, and are less than ten years old. During August and September, 1933, 1,533 of the engines in this group, which also includes the 4-8-2 type, averaged 226,674 miles a day. By an increase from 147.9 to 174.4 miles a day, they are considered capable of averaging a total daily mileage of 267,000. By placing in service 546 engines now in storage or undergoing repairs, this group could show a daily average of 348,000 locomotive miles for the peak period.

Staff Co-operation

AN interesting feature of railway staff policy in recent years has been the increasing tendency of the companies to invite the co-operation of their staffs in securing additional traffic. The first step in this direction was taken by the Great Western Railway in October, 1926, when, following the disastrous effects of the general and coal strikes of that year, it introduced what has come to be known as the Staff Traffic Advice Card Scheme. Sir Felix Pole, then General Manager of the G.W.R., addressed a personal appeal to each employee, enclosing cards upon which could be inserted particulars of traffic movements likely to take place in the near future. The information submitted on these cards was followed up by the traffic officers, and the scheme has since resulted in much valuable traffic being secured for the railway. The text of Sir Felix Pole's letter, together with illustrations of the traffic advice cards, was reproduced in *THE RAILWAY GAZETTE* of October 8, 1926. Subsequently other railway chiefs addressed personal appeals to their staffs. Sir Josiah Stamp addressed two circular letters to the staff of the London Midland & Scottish Railway during 1927, one in March asking for "suggestions for the more economical and efficient conduct of the company's business" and another in August suggesting that greater and more profitable use should be made of the established conciliation machinery for the purpose not only of defending legitimate railway business but of materially adding to it. In this letter Sir Josiah urged the staff to "talk up" their railway and reminded them of the great theme at their disposal, thereby inaugurating the principle of railway salesmanship which has since come to be so closely connected with the company.

In the same year two letters were addressed by the Divisional General Manager to 60,000 railwaymen in the North Eastern Area of the London & North Eastern Railway, requesting their co-operation in securing additional business. Staff co-operation also formed the subject of a conference between local officials of the L.M.S.R. and G.W.R. and the West Midland District Council of the N.U.R., when delegates representing upwards of 25,000 railwaymen were present. The late Mr. R. H. Selbie, then General Manager of the Metropolitan Railway, and the Rt. Hon. J. H. Thomas, M.P., were other prominent persons who gave their support to the cause of railway staff co-operation. In 1928 the Great Western Railway arranged for a lecture on salesmanship to be given at various centres on its system, concluding with a meeting at Paddington in January, 1929. The Southern Railway has also adopted this method of stimulating the interest of its staff. In June, 1932, Sir James Milne addressed a personal appeal to the 100,000 employees of the Great Western Railway, asking for their renewed interest in the Staff Traffic Advice Card Scheme. Judging from the monthly reports which have since appeared in the *Great Western Railway Magazine*, many employees responded to this appeal, with resultant benefit to the company's business in both passengers and merchandise. Also in 1932, Mr. Ashton Davies addressed a letter to the staff of the London Midland & Scottish Railway, requesting their co-operation in securing passenger traffic. A similar letter circulated to the staff of the L.M.S.R. in March, 1933, stated that, as a result of the previous appeal, 381 stations obtained an increase in traffic of 10 per cent. or over and 473 stations obtained smaller increases. As a further step in the same direction, Mr. Ashton Davies supplied the staff with copies of a booklet setting out in detail the various cheap travel facilities offered by their company in order to assist them in answering enquiries from the public. This lead was followed by the Great Western

Railway, which distributed particulars of cheap travel facilities to the staff of the traffic and goods departments, with a covering letter requesting the assistance of employees in making these facilities more widely known. The fact that not only did the L.M.S.R. consider it worth while to pursue the policy of encouraging staff co-operation but that the G.W.R. followed suit, is evidence of the possibilities seen in the scheme by the railway companies generally.

Thus it may be claimed that the railwaymen of Great Britain have received every encouragement to co-operate in securing the additional traffic which is so badly needed. There can be no doubt as to the wisdom of this course. Railway staff at the present time numbers some 550,000 in personnel and the impact upon the public mind of 550,000 enthusiastic salesmen of railway travel and transport must necessarily result in additional business for the companies. Unfortunately, the full force of this powerful influence has yet to be brought into action. Despite the excellent attempts to enlist their help, many railwaymen appear to remain indifferent to the urgency of the situation and oblivious of the fact that by helping the companies to secure increased traffic they would be safeguarding their own position. On the other hand there is undoubtedly a disposition on the part of many employees to do everything they can to assist the companies to retain and regain traffic and these will be quick to avail themselves of the increased opportunities now afforded them of becoming successful salesmen.

Highway Frontages and the Railways

QUITE apart from the many questions which have arisen between rail and road transport systems, the legislation passed in recent years to deal with the improvement of highways consequent upon the growth of road transport has given rise to problems which have assumed proportions possibly unforeseen when the relevant Acts of Parliament were passed. Such are the questions involved by the provisions of the Public Health Act, 1925, and the Roads Improvement Act of the same year which enable local authorities to lay out lines for the future widening of highways and the frontages of new buildings. Under neither of these Acts have the railways an absolute exemption such as was usual in earlier legislation, and in respect of such parts of their property as is surplus to railway requirements the companies are in a similar position to that of any private owner of land. Owing to the extent to which railway boundaries march with those of public roads, to the growing value of land on station frontages and adjoining goods yards and the sites of bridges over or under the line where building development is taking place, and to the shallow depth and awkward shape of many of the areas of land involved, the interests of railway companies are becoming increasingly affected by these provisions.

The Public Health Act, 1925, enables local authorities to prescribe an improvement line, that is, the line for future widening along either side or at or within a distance of fifteen yards from any corner of a highway repairable by the inhabitants at large which is narrow or inconvenient or without any sufficiently regular boundary or which it is necessary or desirable to widen. Before prescribing the line, the local authority must deposit at its offices a plan for public inspection showing the line it proposes prescribing and must serve on the owners and occupiers of the land affected notice of its intentions and must consider any objections they may raise. Not less than six weeks after the date of service of the notices the authority may pass a resolution prescribing the line. After this no new building, erection or excavation, which

presumably includes a cutting, may be constructed or carried out nearer the centre of the highway than the improvement line, without the consent of the local authority. Any person whose property is injured by the prescription of the line may, however, make a claim for compensation at any time. In default of agreement between the owner concerned and the authority the amount of the compensation is settled by arbitration under the Acquisition of Land (Assessment of Compensation) Act, 1919, the arbitrator being entitled to take into account any offer made by the local authority as to the exercise of its powers and any benefit accruing to the claimant from the widening or improvement of the highway. In any case the claimant is not entitled to compensation in respect of new buildings erected after the line is shown on the deposited plan, though this does not apply to work put in hand previous to deposit.

The Roads Improvement Act, 1925, gives a highway authority somewhat similar powers to prescribe building lines, these being lines beyond which no new building may project towards a highway maintainable by the authority. The authority must give two notices to owners and occupiers and owners of land affected by a proposed building line, the first when the plan showing the line is deposited and the second within six weeks of the formal prescription of the line. The effect so far as the erection of new buildings and the excavation of the land affected is concerned is much the same as in the case of an improvement line, except that there are definite time limits for lodging objections and claims in respect of a building line, six weeks after the service of the first notice for objections and six months after the service of the second notice for claims. The authority may, however, purchase by agreement or compulsorily any land not occupied by buildings lying between an improvement line and the boundary of the street, subject to the occupier's right of access over the land purchased until it is made up as part of the street. No such power of purchase is provided for in respect of land between a building line and the street.

Under both Acts a clear distinction is drawn between the property of railway companies "used" for railway purposes (Public Health Act) or "held" for such purposes (Roads Improvement Act), and that surplus to railway requirements and available for disposal. In respect of the former the local authority or highway authority must obtain the consent of the railway company concerned before an improvement or building line can take effect, but both the relevant Acts provide that the consent of the company shall not be unreasonably withheld. In the case of an improvement line the authority responsible for deciding an appeal on the grounds of unreasonableness is the Minister of Health, but in the case of a building line it is the Minister of Transport, who must consult with the Minister of Health. Land which is surplus to railway requirements, though it belongs to a railway company, is treated as though it belonged to a private owner, the company having a right to object to what is proposed and a further right to claim compensation if the objection is overridden, but it has no right to withhold its consent as in the case of land held or used for railway purposes. Both building and improvement lines are frequently prescribed along considerable lengths of highway, but it would seem that the Acts give the highway or local authority no power to prescribe such lines along any parts of a highway, such as raised approaches to bridges or substituted roads, not maintained at the expense of the inhabitants at large. If a railway company failed to sustain an objection to the prescription of a building or improvement line affecting property used or held for railway purposes, it appears that it could claim compensation as in the case of land not so used or held.

Economies in Working Single Lines

WHILE in the United Kingdom only 28 per cent. of the whole of the railway route mileage is single line, in the United States the proportion is 85 per cent.; in India, of the Class I lines alone, the single line mileage is 90 per cent. of the whole, and in the Union of South Africa there are only 223 miles of double track out of a total of 12,913. The necessity for economy in operation in this country has led to the abolition of many signalboxes on double lines. It has also led to the closing at times of an even greater number of boxes, previously always open. That has readily been achieved by means of switching-out apparatus, in which through block communication is established between A and C and admits of the closing of B. Economies on single lines in this country are equally desirable but, at first sight, it would appear as if the switching-out of signalboxes on single tracks is not so simple an achievement as on double lines. That is due to the fact that practically all the single lines in Great Britain are operated by some form of electrically-controlled token. Single lines are divided into sections and each section has its token and the token of one section cannot be used for an adjoining section. It follows that if there were two sections, D-E and E-F, the D-E token could not license the movements of trains in the E-F section, and *vice versa*. The successful and profitable switching-out of token stations on single lines has been in operation for some years. It may be remembered that between May 23, 1929, and April 11, 1930, a series of 33 articles on the working of single lines appeared in these pages. The question of switching-out was dealt with in our issues of October 4 and December 27, 1929. A series of articles on single lines was also running concurrently in our allied journal, *The Railway Engineer*, and this particular feature was discussed in the issue of that paper for May, 1929. The simplicity of switching-out on single lines has now been made more manifest by the paper read by Mr. W. S. Roberts recently before the Institution of Railway Signal Engineers. While all the points brought out in our own articles were mentioned, we find that further improvements have been made during the four years that have elapsed since we dealt with the subject. These newer methods allow, for instance, for the old staff-and-ticket system to be used for long-section working in place of two consecutive shorter sections controlled by the token method, and for what may be called overlapping in the hours of switching-out. By the latter it has been made possible, on a line where there are, say, six boxes, for certain of the intermediate stations to be switched-out for differing periods from all or some of the other intermediate stations.

We must stress the point that in the switching-out arrangements described in our articles, and in the later ideas put forward by Mr. Roberts, the economies effected are not obtained by any sacrifice of safety. That is a most important matter, as one of the outstanding features in the safety of British railways is the freedom from collisions on single lines. It cannot too often be recorded that after Edward Tyer invented the single line token in 1878—56 years ago—there was an interval of 43 years before there was a fatal collision to a passenger train on a single line. That good record was broken by the Abermule disaster of January 26, 1921, caused by an irregularity in working and through no fault in the token system. Moreover, it would not have happened had any one of four different men exercised reasonable care. It must not be forgotten too, that Sir John Pringle, speaking at the Institute of Transport Congress in London in May, 1922, observed that "It may justly be inferred that single lines are operated under token systems with a higher degree of security than railways with two or more tracks."

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

The Towel Problem

Palestine Railways,
Office of the Chief Engineer,
Haifa Station.

May 26

TO THE EDITOR OF THE RAILWAY GAZETTE
SIR.—When I read your editorial remarks headed "The Towel Problem" which appeared on May 18, I was reminded of an arrangement which I saw in use in a first class coach on the German State Railway.

Each towel had a rustless metal eyelet let into one corner and was then folded so that the eyeleted corner was left free. A supply of towels was then placed in a box fixed to the wall and in the process threaded on to a brass rod which ran up through the bottom of the box. When the lid was shut and locked the towel could be removed only from a slot in the side of the box and only as far as the rod allowed. When used the towel was dropped into a lower lidless box into which the brass rod led it. This arrangement was neat and I thought very effective, and the only way for an unauthorised person to remove a towel was to cut its corner off.

In the same coach I used a very effective delayed action faucet which, when pressed, gave time to get one's hands under the spout and kept up a supply just long enough for ordinary requirements.

Yours faithfully,
R. F. SCRIVENER,
Chief Engineer

More Economical Locomotive Working

London,
June 4

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR.—I have read Mr. Robins's letter in your issue dated June 1 with great interest, especially his remarks on the incorporation of the locomotive running section into the operating department. What appears to me to be a better way, however, is the incorporation of the operating into the locomotive running department. I would also suggest that the function of the railway is to provide as well as sell transport at such rates as will stimulate demand and provide adequate return on capital. Proper selling necessitates the existence of a complete commercial department charged exclusively with this most important duty; this, however, is not to be found in most organisations, commerce being usually divided among several sections. As regards provision, this might be left in the charge of properly trained engineers conversant with the million and one aspects of engineering as applied to the operation of railways. Rumour has it that the incorporation of the running department into the operating section has not always worked too well, and has been a source of considerable unrest among officers as well as servants on several railways.

Referring to time schedules, Mr. Robins's railway is possibly not so closely worked as our railways at home, and I would remind him that there are a great many cases where alteration of a schedule or even of routine of working would save a second engine being brought out of the shed; not only a saving of a locomotive in steam but a saving to all

RAILWAY STUDENTS' ASSOCIATION ANNUAL CONVENTION.—The annual convention of the Railway Students' Association (University of London) will be held this year at Belfast from June 15 to 18. The party will leave Euston for Ireland by the Ulster Express on Thursday night, June 14, and will stay at the Royal Avenue Hotel while in Belfast. The convention will be opened by the President, Mr. W. V. Wood, Vice-President, Finance and Service Departments, L.M.S.R. An address of welcome on behalf of the transport under-

other engines whose workings would be tightened up thereby. As regards the use of small engines for wayside shunting, may I ask Mr. Robins again to read my remarks and he will notice that they are aimed at the *busier* and not the *small* wayside station where the hours saved to the road engine (and to its train) would justify the use of the shunting engine? I would suggest that there are a very large number of these.

"YOUR CORRESPONDENT"

Locomotive Lubrication

Grand Buildings,
Trafalgar Square, W.C.2.

June 4

TO THE EDITOR OF THE RAILWAY GAZETTE
SIR.—I have read with considerable interest your editorial on the subject of locomotive lubrication which appears in the current number of THE RAILWAY GAZETTE, with particular reference to the paper that was read by Mr. H. P. Renwick, of the Great Indian Peninsula Railway, before the fifth annual general meeting of the Indian and Eastern Centre of the Institution of Locomotive Engineers.

I observe that it is stated in the editorial that perhaps the greatest advantage of all is that an engine with grease lubrication can be serviced at the running shed and sent out on a round trip of 1,000 or more miles with full confidence that it will need no further attention to lubrication on the part of the driver than the refilling of the lubricator and the oiling of the axleboxes. I would like to point out, however, that one of the outstanding advantages with grease lubrication is its application to the axleboxes, and that with an engine so equipped it is possible to run 15,000 to 20,000 miles without attention, the lubrication being entirely automatic. It is true to say that a grease lubricated engine only requires oil for the cylinders.

Yours faithfully,
ROBT. H. WHITELEGG

Recovering Lost Time

4, Limerick Road,
Redland, Bristol.
May 28

TO THE EDITOR OF THE RAILWAY GAZETTE
SIR.—In his letter of May 13, Lord Monkswell touches upon a nice point, namely the relation between late running and the causes of accidents.

I cannot trace one single railway accident in this country during the past 90 years the cause of which has been assigned definitely to the late running of a particular train or trains. It is possible that in rare cases late running may have been cited as contributory, for example, causing a signalman to overlook the presence of a particular train. However disastrous the result of this error, the effect on the man is merely psychological.

Under the block system each train is treated as a unit. The same process, use of safety devices, and regulations, are religiously enforced whether the unit be running ten minutes before schedule or an hour behind time.

Yours faithfully,
C. R. CLINKER

takings of Belfast will be presented to the Association by Mr. J. B. Stephens, General Manager, Great Northern Railway, Ireland, and the Lord Mayor of Belfast has consented to grant a civic reception in the City Hall on Friday afternoon. Meetings will be held on Friday, Saturday, and Monday, and an attractive programme of excursions has been arranged, including an inspection of the signalling improvement at Greenisland, L.M.S.R. (N.C.C.), and of the colour light installation at York Street, Belfast.

THE SCRAP HEAP

William Plomer in a recent broadcast talk on Japan told about a Japanese student who, on being asked in an examination to say what he knew about Robert Louis Stevenson, wrote: "Robert Louis Stevenson was a famous writer who invented the steam-engine, and because he suffered from a weakness of the lungs was always known as Puffing Billy."—From the "Canadian National Railways Magazine."

* * *

RAILWAY LAUNDRIES

There is one railway department where every day is a Monday, and on a scale sufficient to give any conscientious housewife a nightmare. In the railway laundries, big machines, rumbling contentedly, wash, dry and iron over 20,000,000 articles a year without the least fuss or bother, and use nearly 100 tons of soap in the process. There are washing machines which deal with 2,000 serviettes or 120 bed sheets at a single operation; others which dry, perfectly, 1,000 bath towels or 56 blankets, whatever the wind or weather may be; or iron, dry, air and fold 4,500 table napkins in an hour; and still others that darn and repair at the amazing speed of 3,500 stitches per minute.

* * *

TIMING TRAINS BY THE RAIL-JOINT METHOD

From time to time correspondents make inquiries about timing trains by the rail-joint method. The following table may, therefore, be found useful:—

Rail Length	Number per Quarter-mile (or per kilometre)	For speed in m.p.h.	
		per $\frac{1}{4}$ in.	per km.
29 ft. 6 in.	44 $\frac{1}{4}$	20.2	26.9
30 ft.	44	20.5	34.0
32 ft.	41 $\frac{1}{4}$	21.6	40.3
36 ft.	36 $\frac{1}{4}$	24.6	44.8
40 ft.	33	27.0	53.8
44 ft. 6 in.	29 $\frac{1}{4}$	30.4	
45 ft.	29 $\frac{1}{4}$	30.8	
48 ft.	27 $\frac{1}{4}$	32.8	
60 ft.	22	41.0	
12 m. = 39 ft. 4 in.	83		
15 m. = 49 ft. 2 in.	67		
18 m. = 59 ft.	55 $\frac{1}{4}$		
20 m. = 65 ft. 8 in.	50		
24 m. = 78 ft. 9 in.	41 $\frac{1}{4}$		

In the first column typical rail lengths in use in this country and abroad are given. At the moment the standard rail length for relaying on British main lines is 60 ft. For about 20 years before grouping, except on the L.N.W.R. and certain other lines, 45 ft. was the length favoured. There were certain important exceptions, however. The Great Western used 44-ft. 6-in. rails and the Caledonian and North British 48-ft. rails. Previous to the period just mentioned 30-ft. rails were very largely used (29 ft. 6 in. on the Great Western Railway and 32 ft. on the Caledonian Railway). The North British used large numbers of 40-ft. rails and the Great

Central and Midland 36 ft. In France there are large numbers of 12 and 18-metre rails, and on the Nord relaying is now being done with 24-metre rails. In Germany 15 metres was the usual length until a few years ago, when 30-metre rails were adopted as standard.

Regarding the third column of the table, if the number of rail joints passed over in the period shown is counted, the last number will represent the speed in miles an hour. It is important to begin counting at zero, and it is advisable to count the number of joints in a quarter of a mile from the quarter-mile posts alongside the line to check the length of rails over which the train is passing. In the case of Continental railways, besides the kilometre posts there are usually small intermediate posts at every 100 metres.

* * *

FLYING BY STEAM

Fifty years ago the Great Western Railway, the first British railway to operate an air service, was actively associated with an attempt to fly a steam driven aeroplane invented by a Mr. H. C. Lynfield of Margate. The machine was like the frame of a four-wheel carriage mounted on wheels. It was built of light wood and had a nine-bladed screw. Having obtained a speed of 30 to 35 m.p.h., the inventor calculated that this would be sufficient to lift the machine into the air when it could be navigated by sails with which it was fitted! In order to enable him to test his invention the Great Western Railway Company placed at his disposal, in August of 1883, a portion of the newly-constructed track between Colnbrook and West Drayton. The machine was placed on a truck, the necessary steam being obtained from an engine. The inventor succeeded in getting the machine lifted from the truck into the air and expressed himself satisfied with the results. The *Slough*

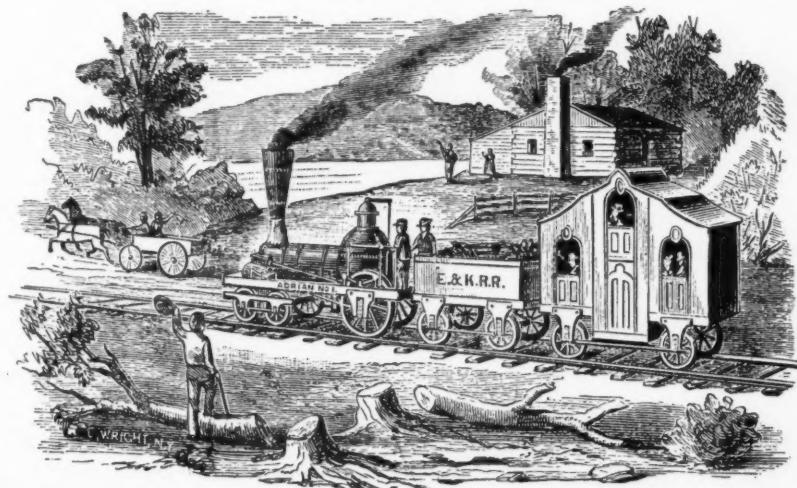
and *Windsor Express* of the period said that Mr. Lynfield "believed air to be the finest roadway under the sun, if he can only use it, and from the result of this experiment . . . he is confident that it is possible to fly in the air at the height of a mile from the ground."

* * *

There is a moral, I suspect, in a story that comes from Manchuria. The State Railway Board of Manchukuo has started a "railhead" motor-lorry service in Jehol in order to develop trade. But the Manchu and the Mongol are not impressed; they don't, I gather, appreciate the point that time is of the essence of the contract. The great "selling" point of the Railway Board, that the new system would speed up transport and bring Jehol nearer Harbin, leaves the local Asiatics as cold as a Manchurian winter. "We don't want to speed up," they say, "the camel is fast enough for us."—From the "Manchester Guardian Commercial."

* * *

The view reproduced below was brought to light some time ago by *The Pullman News*, the staff organ of the Pullman Company, Chicago, Illinois, U.S.A. It is thus described: "The early days of railroading produced some curious passenger coaches, mostly of the type of the passing stage coach. But this one—the 'Gothic' car of the old Erie & Kalamazoo—somewhat resembles a peregrinating church on wheels. It was the 'pleasure car' of the directors, and took the rails in 1837, and the picture was taken from the *Railway Age* of December 25, 1884. The car, when full, held 24, eight in each compartment. The lower middle door opened from a place for stowing baggage, and the middle section projected a few inches wider than the end section. Incidentally, the Erie & Kalamazoo ran between Toledo and Adrian, 33 miles; and the locomotive shown was No. 80 of the Baldwin Works."



An American "Gothic Palace Car" of 1837

June 8, 1934

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

New lines in Argentina—British rails purchased by Argentine Government from B.A.G.S. Railway—Spanish railways in 1933 and construction programme—Indian Conference Sub-Committee meetings—New Zealand prosperity and Empire trade aims

SOUTH AMERICA

Treinta y Tres-Rio Branco Railway, Uruguay

The Ministry of Public Works and the Uruguayan Construction Company have come to an arrangement for the construction of a railway between Treinta y Tres and Rio Branco and the corresponding contract has received the Government's approval.

Antofagasta (Chili) & Bolivia Railway

In connection with the authorisation given in London to the Antofagasta (Chili) & Bolivia Railway Company to modify its statutes so as to permit it to lend money to the Bolivian Government, the Government is said to have asked the company for a loan of 2,500,000 bolivianos for work on the Potosi-Sucre Railway. The Bolivian Government is in arrears of payments, amounting to about five million bolivianos (£250,000). It is now suggested that the Antofagasta (Chili) & Bolivia Company should continue the construction work, charging the cost to the Government as a loan.

Argentine Railway Extensions

A decree has been published by the Argentine Ministry of Public Works, authorising the State Railways to utilise one million paper dollars from the Renewals Fund for continuing the construction of the line between La Paz (Entre Ríos Province), Feliciano and San Jaime.

The little township of San Carlos de Bariloche, on the south shore of the Nahuel Huapi, the centre of the beautiful Argentine Lake District, was *en fête* on May 6, the occasion being the completion of the railway line from Viedma on the River Negro, which passes by San Antonio on the South Atlantic coast, and the arrival of the first locomotive. This gives the lakes direct railway communication with Buenos Aires, via Patagones, the most southerly terminus of the Buenos Ayres Great Southern Railway.

Twenty-five years have elapsed since work on the construction of the State line between San Antonio and Lake Nahuel Huapi started and innumerable difficulties have been encountered, not all of an economic nature, as the lack

of fresh water in the desert through which much of the line runs was a very serious obstacle. Nearing the lakes two large rivers had to be bridged and the rocky nature of the country made the work as a whole difficult. On May 15 last year, the Government signed an agreement with the Buenos Ayres Great Southern Railway, whereby that company undertook to complete the line to Bariloche, a distance of 50 km. from what was then the railhead at the Pichileufú river. The completion of this line will give a tremendous fillip to tourist traffic to the Southern Lake district. Thousands of people have visited this famous holiday resort, but thousands more have refrained from doing so up to now, owing to the lack of direct communication by rail, and the fear and inconvenience of the long motor car journey from the railhead to San Carlos de Bariloche. Now that this is a thing of the past, passenger traffic between Buenos Aires and the lakes next summer should increase by leaps and bounds.

Argentine State Railways Purchase Rails from B.A.G.S.

It is interesting to read that the Argentine Government has decided to purchase 140 km. of rails from the B.A. Great Southern Railway, owing to the faulty manufacture and irregular delivery of the Spanish rails ordered last year from the Altos Hornos de Vizcaya. It will be remembered that when it was known in London that a large contract for steel rails had been awarded to the Spanish company, just when negotiations with the Roca mission were about to commence, considerable dissatisfaction was caused, especially in those circles opposed to any concessions to Argentina. A delivery of 50 km. of rails with all accessories is to be made at Patagones for the renewal of the line from San Antonio to Nahuel Huapi, in the Argentine Lake District, the price quoted being £7 15s. 3d. per ton, and the other 90 km. will be handed over at Santa Fé port, at a price of £7 10s., to be used for the line between J. V. Gonzalez and Pichinal.

The Presidential Message

Argentine Congress re-opened with the usual ceremony on May 3, and in

his message—which he read in person—the President, General Agustín P. Justo, made the following remarks in regard to railways: In connection with the decrease in railway traffic and increasing competition from road transport concerns, he stated that the companies had done much towards offsetting that competition by reduced tariffs and advantages, but a law for the co-ordination of transport was urgently needed. Despite the financial difficulties which the companies had to face, certain works had been carried out, the most important of these being the construction of the Villa Rosario to Forres line of the Central Argentine Railway. The administration of the State Railways had improved considerably, the revenue having risen by 3·71 per cent., whilst expenses had been reduced by 13·84 per cent. In regard to public works, it was stated that work had been started on a great plan of road construction, the autonomous board having been authorised to spend \$133,000,000 up to the end of 1935.

SPAIN

Northern of Spain Results for 1933

A preliminary note has been given to the press by the Northern Company of the results of working for 1933. Traffic receipts amounted to 336·41 millions of pesetas, or 14·78 millions less than in 1932, while working expenses amounted to 258·21 millions, slightly under those of the previous year. Financial charges were 82·83 millions, or 0·69 less, leaving a net loss on working of 13·89 millions, in comparison with a net profit of over half a million in 1932. No dividend can therefore be paid again this year out of earnings, but 10 pesetas per share will be paid when the cash position permits, from the interest on the company's investments.

M.Z.A. Results for 1933

A preliminary note is published in the Madrid press giving the results of working on the Madrid, Saragossa and Alicante Company for 1933. Receipts from traffic amounted to 285·33 millions of pesetas, or 6·63 millions less than in 1932. Working expenses amounted to 222·89, which is 11·44 more than in the previous year. Financial charges were slightly less, amounting to 79·36 millions, leaving a net loss on working of 22·97 millions. A dividend of 10 pesetas per share is announced, to be found out of interests on the company's investments and to be paid when the cash position permits.

The Completion of Various Constructions

A Bill is to be submitted to the Cortes by the Minister of Public Works authorising him to proceed systematically with the construction of a number of chord and secondary lines of railway upon which there has been intermittent construction work in hand during the

past two years. Some of these lines are of strategic value, others of purely local significance while several of the more important are in the form of short cuts between provincial centres. The State has already expended upon them about 800,000,000 pesetas, and it is calculated that a further 1,000,000,000 will be required to finish off all the constructions which have already been begun or are proposed. The principal consideration now is order of priority based upon utility and general importance. As matters stand, the Spanish railways have been gradually built up by private enterprise, but not to any definite preconceived plan, and they take the general form of a radial system, with Madrid as its centre. The Government now holds that such a system does not provide adequate transport facilities for the industry of the nation, so that although the Bill will assist in the improvement of this radial system by the completion of the Cuenca-Utiel, Madrid-Burgos, and Zamora-Orense-Santiago-Coruña lines, it is also framed with the idea of connecting up the "spokes of the wheel," obviating the necessity of passing

through Madrid in order to get from one provincial centre to another. Among these transverse lines are the Baeza-Utiel, Soria-Castejon and Jerez-Almargen. The lines of purely local interest are allotted only about 20 per cent. of the funds available and are considered as of secondary importance.

A complete list of the lines outlined in the Bill are therefore divided into two groups, (a) the more important:—

Cuenca-Utiel	...	...	112 km.
Santiago-Coruña	...	...	74 "
Madrid-Burgos	...	...	281 "
Zamora-Orense	...	...	251 "
Baeza-Utiel	...	...	366 "
Soria-Castejon	...	...	98 "
Jerez-Almargen	...	...	129 "
Ferrol-Gijón	...	...	304 "
Huelva-Yanamonte	...	...	50 "
Orense-Santiago	...	...	126 "

and (b) those of secondary importance:—

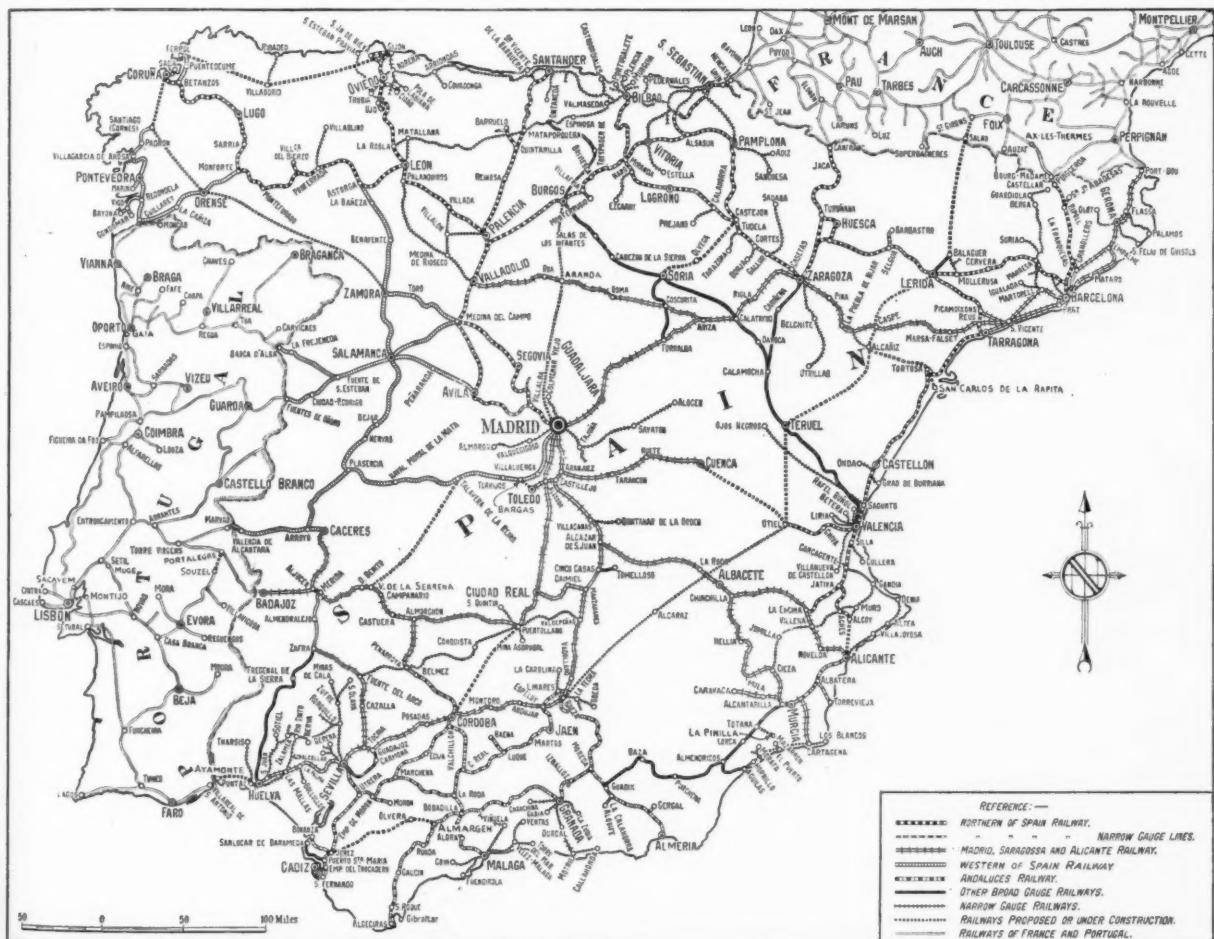
Talavera de la Reina-Villanueva	...	...	187 km.
Alicante a Alcoy	...	...	66 "
Puertollano-Cordoba	...	...	115 "
Alcantar-San Carlos de la Rapita	...	...	128 "
Aguilas-Cartagena	...	...	44 "
Totana-La Pinilla	...	...	20 "
Teruel-Alcañiz	...	...	167 "
Lérida-Alcañiz	...	...	114 "
Toledo-Burgos	...	...	18 "
Lérida-Santa Girons	...	...	165 "

PORTUGAL

The Railways To-day

In the course of a recent lecture entitled "Railways in the National Organisation of Transport and Touring," Senhor Vicente Ferreira, a Portuguese railway engineer, emphasised the fact that from the point of view of existing railway connections, Portugal was divided into three distinct geographical areas, one north of the River Douro, a second between the Rivers Douro and Tagus, and the third south of the Tagus. Between the first and second, and also between the second and third areas, there is only one line of railway connection in each case, the single track bridges over the Douro between Vila Nova de Gaia and Oporto, and over the Tagus at Muge. Yet between Portugal and Spain there are no fewer than five rail connections.

The Portuguese railway system is designed to deal with international traffic, which does not exist in any appreciable volume, but it is sufficient to make internal traffic difficult, whereas it is internal traffic that should be



Railway map of Spain and Portugal, showing different Spanish systems and gauges

developed. Something is, however, now being done to wipe out this anomaly, notably the construction of a chord line from Souzel to Portalegre, which will connect the central and southern area systems. The Portuguese Railway Company has also a project for a second bridge over the River Douro at Oporto, and for the linking up of Lisbon with Montijo, on the south bank of the Tagus, by way of the projected bridge over that river, which will be a most useful piece of work.

Sweeping Improvements Required

Of primary urgency, however, is the rehabilitation of the existing lines, particularly those of the old State system. To remedy the situation, Government has already voted the sum of £950,000, but it is estimated that at least four times this sum would be required to carry out all the work considered to be necessary.

A very important problem all over the Portuguese railway system is the inadequacy of the stations. New stations are urgently needed in Lisbon and in Oporto in particular, as traffic operation is hampered by lack of proper station accommodation. To improve and increase stations is essential for the acceleration and cheapening of railway transport. At the present time the Portuguese Railway Company is considering the construction of new stations in Lisbon and Oporto, the electrifying of the urban systems round these two cities, the construction of a sorting yard at Sacavem, the changing of the signalling system, the acquisition of railcars, and the carrying out of other much needed improvements, all of which together would require an outlay of about £3,000,000.

Legal Revision Necessary

The most radical change demanded is, however, in the Railway Statutes. The present "Police and Railway Exploitation Regulations" date from 1864, thus being older than the Civil and Commercial Codes of the country. Only on two points has legislation in respect of railways progressed in seventy years: one in the direction of closer fiscalisation, the other in the levying of taxes. The existing tax, or levy, of twelve per cent. on transport charges is undoubtedly killing traffic. It increases the cost of products handled, and the consumer suffers, as do passengers, the effect being passed on to the railway companies and finally to the State, by reducing receipts from taxation.

It is easy to criticise a lecture such as the above, and undoubtedly there is plenty of room for improvement on the Portuguese railways, but in a country where projects abound but are rarely brought to realisation some time must elapse before any great improvement is forthcoming, and by that time improvements in other more wealthy and more practical countries will have moved on, so that there is bound to be a constant lag behind other countries' railway systems.

INDIA

Import of Railway Stores

The Stores Transactions of the various Indian railways for the year 1934-35 include provision for the purchase of stores from abroad to the value of Rs. 185 lakhs.

Meetings of Conference Technical Committees

Darjeeling was the venue of meeting of two technical committees of the Indian Railway Conference Association in April last. Mr. S. Povey, Chief Electrical Engineer of the B.B. & C.I. Railway, presided over the Electrical Section, the agenda of which included discussions on the electrification of railway carriages and electric traction. Mr. Wilson, Chief Electrical Engineer, M. & S.M. Railway, was elected Chairman of the section for the current year. The Signal Engineers' Committee, with Mr. Rose of the M. & S.M. Railway in the chair, disposed of an agenda of technical details.

The next meeting of the railway administrations in Calcutta and the representatives of the mercantile community in Calcutta was to have been held on June 1. Such meetings were initiated in Calcutta just a year ago. Periodical meetings between the railway administrations and the representative of the Chambers of Commerce are also held in Bombay. Sir Guthrie Russell, Chief Commissioner of Railways, circularised the railway administrations on the advisability of maintaining close touch with the commercial community. Meetings of this kind not only foster friendly relations between the railways and their customers but are calculated to bring about a better appreciation of "the other point of view."

Revised Calcutta-Bombay Air Service Proposals

It is understood that the firm of Tata & Sons has submitted revised proposals to the Government of India for the inauguration of a daily air service between Calcutta and Bombay. An earlier scheme which involved a certain amount of Government subsidy was unacceptable. The new proposals are reported to be based upon the guarantee of a minimum quantity of letter mails carrying a small surcharge of an anna in addition to the usual postage. The proposal involves adequate provision for night flying and additional landing grounds en route. The scheme for a nine or ten hour service between Calcutta and Bombay in place of 36 to 40 hours taken by rail is doubtless attractive and the minimum amount of mails required by the promoters may be forthcoming. It is not, however, possible for the Government of India to give a guarantee in this respect, as the carriage of mails by air with the prescribed surcharge rests entirely on the public demand for accelerated service. Government correspondence between Calcutta and

Bombay is not heavy. The Government of India may, possibly, defer the consideration of Tata's proposal till the maturity of its policy in the matter of co-ordination of transport.

NEW ZEALAND

Mounting Revenue

The railway year here is accounted for in four-weekly periods and ends on March 31. With but one period remaining, the accounts to March 3 show an increase in net revenue of £226,589 over the returns for the corresponding term in the previous year, or a total net revenue of £966,000. This remarkable improvement is shared about equally by the passenger and freight services. The figures for the principal holiday month, December 15 to January 15, gave a good indication of how the passenger business was improving, for they showed an increase of 30,000 passengers and £7,000 revenue. The Easter figures showed an even greater proportionate improvement. The £34,000 required to make a working profit of £1,000,000 for 1933-34 should be exceeded without any difficulty.

"Trade Within the Empire"

"Trade within the Empire" is the policy of the New Zealand Government Railways Board in obtaining stores and material. As the largest industrial undertaking of this country, the requirements of the Railways Department are very considerable.

A recent cable message from London referred to a statement by the High Commissioner for New Zealand (Sir James Parr) regarding a contract just made with British firms to supply the New Zealand Government with £100,000 worth of railway material. This order was made up of rails and fastenings and is to meet the ordinary needs of the department, as well as its requirements in connection with the construction of lines for the new Wellington station and Tawa Flat deviation.

Railway Coal Contracts

The principal source of coal supply in the North Island of New Zealand is in the mining area adjacent to the Waikato River in the Auckland district. This brown coal is used throughout the island, and keen competition occurs for supply to the Railways Board. Last year the contract was held by one company, but it has now been decided to distribute it between the five Waikato companies, for three years. For the first 96,000 tons of screened coal, 14s. 5d. is the agreed price; but an additional 10 per cent. is to be supplied at the same figure to allow for contingencies. The fact that the Railways Board has been able to make some mechanical adjustment to the engines used, has altered the position of the mines in the Waikato, inasmuch as Waikato coal can now be used throughout the year, and not merely during part of it.

RAILWAYS AND ROAD TRANSPORT SECTION

This section appears at four-weekly intervals

Rail and Road in the U.S.A.

IT is clear from the annual reports, covering the year 1933, of the railways in the United States that the efforts made to meet the competition from independent road transport operators are continuing to meet with success. That the co-ordinated road services provided by the railways, either direct, through subsidiary concerns, or through associated companies, are appreciated is being shown in the best way—through increased traffic. In a recent issue of the *Railway Age* it is stated that the records of the Reading Transportation Company, a subsidiary of the Reading Railroad, showed that the average net tons a month handled by the train-substitution services were 1,426, an increase of 12.3 per cent. over the 1932 figure. The common carrier services showed an average net tonnage of 4,682 a month, an improvement of no less than 150.6 per cent. over the previous year's record. The amount of traffic which has been attracted is taxing the capacity of the fleet of 62 lorries, tractors, and semi-trailers, and the greater part, if not all, of this freight would have been moved by independent operators if the transportation company had not been available to save the revenue for the railway.

The trucking services of the Reading Transportation Company were organised with two main purposes in view. In the first place it was desired to replace freight train service with motor truck service, where by this means operating expenses could be reduced and the service to patrons improved. Under this train-substitution plan lorries are operated to and from concentration points; freight is moved by train between these concentration points and points of distribution on night trips and is delivered by the motor vehicles to the outlying stations on

the following morning. The lorries on this work run simply from station to station and do not perform collection or delivery work, but they facilitate the movement of the freight and enable substantial savings to be made in operating expenses. The second type of motor operation is known as the common carrier service and is similar to the service rendered by the independent operators, except that the transportation company not infrequently moves its interstate common carrier freight by train where economy can be effected. The advantages claimed for the common carrier service are speed in transit, late pick-up of freight, and early delivery at destination the following morning.

There is no indiscriminate rate cutting. The published tariffs are on file with the Pennsylvania Public Service Commission and show class rates, based on railway station-to-station rates, with an additional charge for collection and delivery services rendered. When circumstances arise which make some rate reduction necessary in order to cope with a specific situation, the reduction is accomplished in accordance with the law by the replacement of class rates by commodity rates.

For the heavier types of service between the various points the company employs 14 tractors and 20 10-ton semi-trailers. It is interesting to note that this type of vehicle is proving useful in railway work in the United States, as it is in Great Britain. The fleet also includes two 10-ton trucks, 16 5-tonners, two 5-ton tractors and semi-trailers, four 3-ton lorries, and two for loads of from 1 to 1½ tons, the lighter vehicles being used for the collection and delivery work. In certain places contracts have been made with local concerns to handle the cartage work required in connection with collection and delivery in their districts.



One of the semi-trailers utilised by the Reading Transportation Company in the services referred to above

Public Control of Passenger Traffic Outside London*

At the outset Dr. Fenelon said that the term "public control" might be interpreted so as to include (1) public regulation, (2) public ownership, and (3) public operation of passenger transport and pointed out that ownership and operation were not necessarily the same, since a public body might lease its undertaking to be worked by a company. It was almost universally agreed that some degree of public regulation of transport was necessary in the interests of the consumer and of public safety. Transport was a public utility service, akin to the supply of water, gas, and electricity; it frequently tended to monopoly; and it often required the compulsory purchase of land, wayleaves, or easements or otherwise interfered with the private rights of individuals. Passenger transport implied a public service, especially in great cities where the population was spread over wide areas, and hence there was a case for some public control over it.

The undertakers of transport services had long been regarded as properly the subject for legislative control, but Dr. Fenelon pointed out that, while in the past the regulation had been largely negative, laying stress on what might not be done, more recently it had become more positive as in the Acts of 1921, 1930 and 1933. In doing away with the old licensing system—there were actually some 1,330 different licensing authorities—the Road Traffic Act, 1930, inaugurated a new era in which a much greater degree of State control was a characteristic feature and in practice gave a legal recognition to undertakers, both large and small, who were previously operating road services.

Monopoly Powers

It was sometimes asserted that, as a result, services had deteriorated, that fares had been raised somewhat and that older vehicles had been kept in service. On the other hand the large passenger road transport concerns had already obtained something approaching a monopoly by 1930 and they were probably then in a position to benefit themselves by their monopoly powers. The Commissioners, if they cared to exercise their authority, could exert considerable pressure in securing the public interest and in controlling monopolistic powers. The danger always present in governmental regulation was, of course, that it may be overdone and the dead-hand of rigid State control might prevent progress. The alternative, however, would seem to be that of largely uncontrolled monopoly.

Tramways and municipal undertakings had had to obtain their legal powers by means of private or local Acts, an old procedure invoked long

before the days of modern transport by the promoters of water companies, river weirs, ports and turnpikes. It was a procedure which was expensive and inelastic in nature and had been responsible for the haphazard growth of municipal transport. There was, too, the Tramways Act of 1870, passed at a time when local authorities were aggrieved with the water and gas companies and were apprehensive of another monopoly attaining a similar position. The Act prescribed that the assent of the local and road authorities should be obtained before a tramway could be constructed and then the concession was to be granted only for 21 years. Those provisions were responsible for stimulating the municipalisation of tramway systems which went on continuously so that by 1922, out of 250 tramway undertakings in the country, 170 were owned and operated by municipalities.

Motor Bus or Tram

After the war, the rapid development of motor transport completely altered the conditions. The motor bus as a far more flexible and mobile instrument of transport than the tramway was able to serve extensive areas without regard to administrative or other artificial boundaries, but municipal transport undertakings and tramway companies were not allowed to operate buses even in substitution for a tramway without the express permission of Parliament and, even when powers were obtained for the purpose, they were often restricted to certain areas. Faced with severe motor bus competition such undertakings felt the need for some sort of protection for their services and this was recognised by the departmental committee of 1925. Parliament had granted protection in certain cases and the Traffic Commissioners under the Road Traffic Act, 1930, had also granted protection, and their action had been upheld on appeal by the Minister of Transport.

Dr. Fenelon pointed out that the 1930 Act had largely altered the position of municipal transport and had greatly facilitated the amalgamation of municipal undertakings, enabling them to run motor bus services over any roads in their districts and on roads outside the boundaries, provided they obtain the consent of the Traffic Commissioners. They could enter into working agreements with other operators—either municipal or company—and could apply to the Minister of Transport for the removal of restrictions or prohibitions imposed by a local Act or Order. These important changes in the legislative attitude towards municipal undertakings had given them greater opportunities to develop their systems and put them on more nearly equal terms with private operators.

There was, too, the trend of road

passenger transport development since the war in the direction of very large operating units, especially in urban and industrial districts, and the large combines might tend to squeeze municipal undertakings, working in isolation, out of business unless the municipalities met combination with combination and co-operation with co-operation. Furthermore, the services required from municipal undertakings as public utilities and social services were changing in character owing to the spread of city populations over larger areas with the development of new housing estates.

Municipal Co-ordination

Dr. Fenelon indicated that combinations might be effected broadly in two ways: (1) by the formation under a local Act, Order, or Provisional Order, of a joint board which, with a corporate existence, could hold property, borrow money, and raise money by way of precept. (2) by the constitution of a joint committee which, in general, was not a body corporate and could not raise rates or borrow money. Examples were given of both methods in connection with water, sewerage, isolation hospitals, education, and other branches of local government. In addition, there were the public trusts for the management of docks and harbours.

Reference was made to the formation of joint bodies like that for the Burnley, Nelson, and Colne Corporation road transport undertakings; the joint company in which the Keighley Corporation and the West Yorkshire Road Car Co. Ltd. are interested; the agreement between the York Corporation Transport and the West Yorkshire Road Car Co. Ltd.; the agreements between the municipalities of Halifax and Sheffield respectively and the railway companies; and the agreement between the Hull Corporation and the East Yorkshire Motor Services Limited. A number of municipal transport systems had been purchased, leased or taken over by large motor bus companies and negotiations were in progress for such action in many other places. The process of absorption would continue and might extend to larger municipal undertakings unless local authorities themselves adopted a policy of amalgamation and co-operation.

The Way to Economy

The advantages of such amalgamation were summarised. There was the possibility of through routes, the inter-availability and uniformity of fares and conditions, the economies in administrative and maintenance staffs and so on, the smaller number of reserve vehicles necessary, and the savings to be effected through buying in larger quantities. Dr. Fenelon went on to indicate how the financial problems might be dealt with, and also discussed the question of the relations with other transport concerns. If a municipality wanted to encourage a railway to hasten on suburban electrification, it would probably require to offer some

* Summary of a paper presented by Dr. K. G. Fenelon at the Institute of Transport Congress at Leeds, on June 7.

scheme of traffic pooling in exchange. At present it would be difficult to arrange such pooling schemes owing to the multiplicity of local authorities.

Reference was made to the scheme now under consideration for a joint municipal passenger transport board for South-east Lancashire and East Cheshire, taking in 9 to 11 areas round

Manchester. Incidentally, it was illuminating to hear that the authorities concerned operated under some 56 local Acts affecting tramways and 20 other Acts affecting buses. The combined rolling stock would aggregate 1,600 tramcars, 700 buses, 50 parcels vans, about 90 permanent and overhead repair vehicles, and 60 other vehicles.

It was obvious that important economies could be secured by a joint board with only one reserve of vehicles, &c.

Dr. Fenelon brought his paper to a conclusion with an examination of the principles underlying the formation of the London Passenger Transport Board and the possibility of its applicability to the provinces.

Thornycrofts at Home and Abroad



Another view in the fine garage which the San Paulo Railway Company has built to accommodate its extensive fleet of road motor vehicles, and in this picture it will be noted that a good number of the Thornycroft two- and three-tonners which have been giving a good account of themselves in the company's service are lined up. The garage includes the necessary equipment to service the large and growing fleet so that it is maintained in the best possible running order. These illustrations go to show that at least one of the South American railways is doing its best to provide efficient road services for its patrons.



The illustration on the left is one of the Taurus Thornycroft 6-ton outfits recently delivered to the Southern Railway. Each of these vehicles is fitted with a Thornycroft drawbar gear, and will draw a four-wheeled trailer carrying up to a 6-tons pay load. It will be noted that it is of the snout-nosed type, so that the maximum payload can be carried without the legal axle weights being exceeded. The bodywork is to S.R. specification, and comprises hinged sides and one fixed bolster with a detachable bolster amidships.

The Henschel Steam Omnibus

Some details of a new vehicle produced by the well-known German firm, designed to make use of a fuel oil produced from brown coal

THE accompanying drawing shows the general arrangement of the steam equipment of a chassis built by Henschel & Sohn A.G., Kassel, and fitted with a 22-seater, single-deck body for the purpose of extensive trials, including regular operation on a route with 1.2 km. (3/4 mile) of continuous 1 in 9 gradient on which there are six stopping places. Reporting on the performance of this vehicle, Direktor H. Uhlig, Wuppertal, gives the data in Table I for the weights of the steam bus compared with petrol and diesel vehicles of the same capacity, viz., 22 seated and 15 standing passengers.

TABLE I—COMPARATIVE WEIGHTS OF STEAM, PETROL AND DIESEL OMNIBUSES (22 SEATED, 15 STANDING IN EACH CASE)

	Steam	Petrol	Diesel
Weight, chassis...	5,140 kg. (5 t. 1 c. 1 q.)	4,880 kg. (4 t. 16 c. 0 q.)	5,250 kg. (5 t. 3 c. 1 q.)
Weight, body ...	2,000 kg. (1 t. 19 c. 1 q.)	2,000 kg. (1 t. 19 c. 1 q.)	2,000 kg. (1 t. 19 c. 1 q.)
Weight, fuel ...	200 kg. (441 lb.)	200 kg. (441 lb.)	200 kg. (441 lb.)
Weight, water ...	150 kg. (331 lb.)	35 kg. (77 lb.)	35 kg. (77 lb.)
Weight, running order (empty) ...	7,490 kg. (7 t. 7 c. 2 q.)	7,115 kg. (7 t. 0 c. 0 q.)	7,485 kg. (7 t. 7 c. 1 q.)
Weight, fully loaded ...	10,220 kg. (10 t. 1 c. 1 q.)	9,845 kg. (9 t. 14 c. 0 q.)	10,215 kg. (10 t. 1 c. 0 q.)
Weight of passengers per cent. of total weight ...	25.4 per cent.	26.4 per cent.	25.4 per cent.
Weight in running order per passenger (37 of)	203 kg. (448 lb.)	193 kg. (425 lb.)	203 kg. (448 lb.)

Single-pedal control is used on this steam vehicle and no gear-changing is involved. It is claimed that the freedom from vibration and the absence of gear-changing will appreciably prolong the life and reduce the maintenance

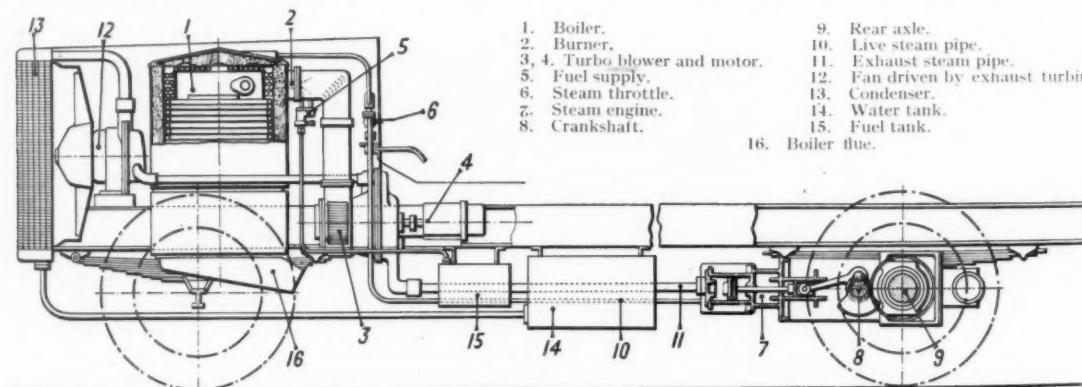
costs of the vehicle; while the more rapid acceleration and superior overload capacity of the steam engine result in 20 per cent. higher journey speed, assuming the same maximum speed and allowing for all intermediate stops and delays. The steam heating of the passenger space is an additional attraction. As regards the fuel consumption, Direktor Uhlig presents data as in Table II, and estimates that 14 per cent. lower consumption can be reached with the steam bus when more experience has been gained.

TABLE II—FUEL CONSUMPTIONS AND COSTS OF PETROL, DIESEL, AND STEAM BUSES

		Fuel Oil	Gas Oil	Petrol-Benzol Mixture
Price, pence per gall.*	... ...	5.3	6.8	18.2
Miles per gallon—				
Petrol vehicle	... ...	—	—	5
Diesel vehicle	... ...	—	6½	—
Steam vehicle	... ...	4	4	—
Fuel cost—				
Petrol-benzol, pence per mile	... ...	—	—	3.6
Diesel, pence per mile	... ...	—	1.0	—
Steam, pence per mile	... ...	1.3	1.7	—

* At 1 mark = 11½d.

The fuel oil and gas oil mentioned in Table II are derived from German brown coal and their utilisation in preference to imported petrol is an important consideration. Data concerning the consumption of lubricating oil is not yet available, but the amount is less than in internal combustion engines of equal power. The water requirements at present amount to nearly 18 gall. per 100 miles (about 5½ m.p.g.), but this figure can be reduced. Thorough examination of the boiler after about 6,200 miles' running revealed no trace of corrosion.



Diagrammatic layout of the boiler and engine connections in the Henschel steam omnibus

ROAD SERVICES IN POLAND.—A number of motorbus services are being started by the motor transport department of the Polish State Railways to take over their feeder traffic, says a dispatch from Warsaw quoted by Reuters Trade Service. A new Polish law relating to motor traffic recently brought into force renders the private running of buses more difficult, and it is stated that in Warsaw

20 per cent. of the private buses have been withdrawn from service. The Polish State Railways appear to be endeavouring to assume control of all motor transport in the country. As a beginning they are putting into service 80 buses manufactured by the Saurer, Fiat and Ursus firms. Private operators can only obtain licences provided they undertake to use vehicles made in Poland.

New Motor Vehicles for L.M.S.R.

An extensive programme to improve efficiency of road transport fleet involves placing of large orders with British manufacturers for many different types

DETAILS will be found among Contracts and Tenders on page 1042 of this issue of the orders for road vehicles just placed by the London Midland & Scottish Railway. The magnitude of the orders indicates both a remarkable expansion of the road transport fleet and the determination to improve the efficiency of the

Strictly speaking, of course, they are not all road vehicles as they include a couple of shunting tractors, two other tractors for platform work and a works truck; but they form but a small proportion of the total.

Contemplating the list of orders which have been placed there are a number of considerations which come to mind.



A batch of seven Karrier Cob tractors lined up at the works recently, ready for delivery to the L.M.S.R.

company's equipment so as to meet increasing traffic requirements in an adequate way and at the same time improve the standard of service rendered. Actually the company's programme for 1934 totals to 1,072 vehicles, made up of 515 motors and tractors and 557 trailers.

There is, first, the great variety of the types of vehicles including those for the carrying of livestock, the motor horse boxes, parcels and general utility vans, tipping lorries, vehicles for heavy loads, and passenger cars. Another striking feature is the large scale of the orders for



The new Albion, 6-ton overtype chassis, which can handle a gross load of 8 tons. The four-cylinder petrol engine, although it is rated at 34.2 h.p., is stated to develop over 80 b.h.p., and either the Gardner or Beardmore oil engine may be installed, if desired

the three-wheeled style of van tractor and the lesson conveyed by the fact that the number of trailer orders is very nearly twice that of the tractors. Actually, orders have been placed for 294 of these tractors, while the number of trailers to be obtained is 540. That emphasises the great advantage of the mechanical horse tractors in that as the tractors can leave the trailers they are available to be employed on work while the trailers are being loaded or unloaded. From time to time we have recorded in these pages the progress which has been made in the use of these van tractors for collection and delivery work to and from important goods depots and the size of these orders indicates that the L.M.S.R. has decided upon making increased use of these tractors, in order to replace horses.

It is obvious, too, from the list that some of the vehicles

are being obtained with a view to obtaining experience with new types, as there are a number which have not hitherto been associated with railway service. In the same way it may be noted that moving floor bodies are represented as well as the Pug type of van in which the driver is placed low down in front of the platform and the engine placed under the load, a development which it will be interesting to watch in view of the reliability of modern power-plants, and the fact that drivers are not sufficiently skilled to make adjustments.

Following on the extensive series of orders placed by the L.M.S.R. in September last, this latest issue does afford definite evidence of the enterprising way in which British railways are tackling goods transport problems with a view to giving the community the best possible service.



A batch of ten Guy Vixen 2½-tonners recently put into service by the L.M.S.R.

The Leyland Torque Converter

With the recent installation of an electrical testing machine, the torque converter shop at Leyland has become a complete and self-contained department with a weekly output of some half-dozen units, which can be increased. Hitherto these units had to be sent to the Research Department for testing. The decision, made when the Leyland Motors Limited had perfected the design of the torque converter (Lysholm-Smith system), to make the department for its manufacture a separate and self-contained unit, has proved to be a wise one in light of the steady demand for this form of transmission for rail cars and buses.

The building has a floor space of 9,000 sq. feet, and the plant used, including delicate machines for the production of the blades, is of the most modern type. Not the least interesting is the balancing machine. On this, each separate rotating part, after assembly, is balanced and the machine records the amount by which the part may be out of balance, and actually restores the balance by the removal of the correct amount of metal. Thus, any possibility of vibration is eliminated. Finally, before the converter is passed out, it undergoes tests on the electrical test bench, and it is stated that although each unit is tested throughout its speed range, in no case has a

variation of more than 2 per cent. been revealed—a striking tribute to the accuracy of the machining assembly and inspection.

Co-ordination in Hungary

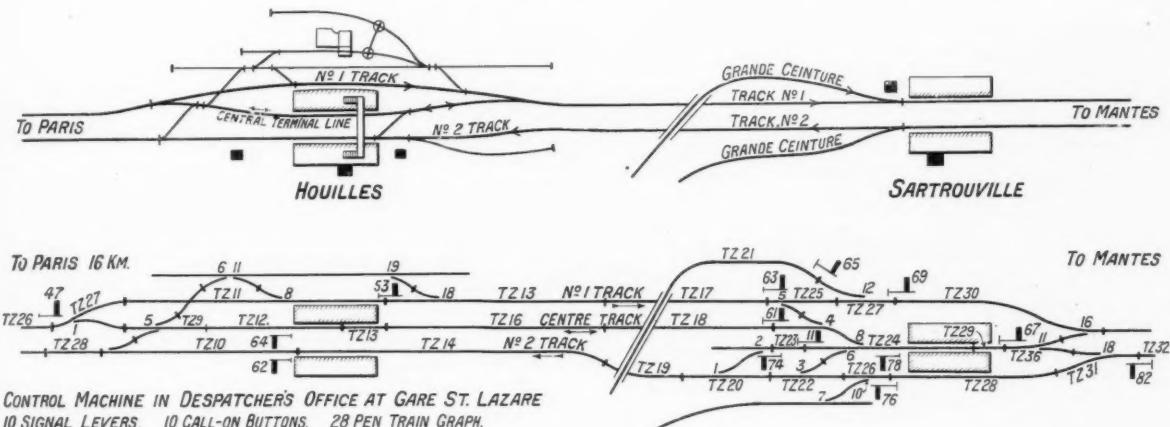
In a recent issue of *World Trade*, the journal of the International Chamber of Commerce, it is pointed out that in Hungary the right to carry for profit by motor vehicles is reserved, in principle, to the State railways. However, the latter have delegated the operation of this concession, granted to them by special decree, to the National Association of Motor Transport Operators with whom a contract was signed on August 1, 1933, the Minister of Commerce having given his approval. Tonnage premiums are to be granted on traffic brought to the railway by members of the Association. All goods motor transport operators are expected to join this organisation, to which the "Mavart" (Hungarian State Railways Motor Transport Company) also belongs. It fixes minimum rates per vehicle-kilometre for carriage by lorries of members. Ancillary services are completely free from regulation.

CENTRALISED TRAFFIC CONTROL IN FRANCE

The first installation of C.T.C. on the Continent of Europe has recently been brought into use by the French State Railways between Paris and Achères

THE traffic on the line between Paris and Achères had grown to such an extent by the year 1930 that it was decided to lay down two additional lines, making four in all, between the stations of Houilles-Carrières-sur-Seine and Sartrouville—where the populations had grown from 14,000 and 6,200 respectively in 1911 to 29,000

daily becoming more pressing. In 1931 a visit was paid to the United States by a number of French railway officers—one among several such visits in recent years—and it is not surprising that they were greatly impressed by the possibilities of the C.T.C. systems which they saw. As a result, a new plan was prepared for the Houilles-



Figs. 1 and 2—Plans showing the section of line before and after the installation of the C.T.C. system

and 14,600 in 1926—similar to the widening between Achères and Maisons-Laffitte. A measure of relief had been obtained, it is true, by putting in an additional platform line at Houilles, enabling some trains to terminate there, but this afforded only a partial solution of a problem

Sartrouville section, in which only one additional line, but adapted for both-way working, was required. This was to be equipped with track circuit-controlled automatic and semi-automatic signals and a C.T.C. apparatus, to be worked by the despatcher at St. Lazare station, Paris, about 16 km. distant, who supervises the working of the Paris to Mantes and other lines.

The Houilles-Sartrouville Installation

The arrangement of the lines before and after the installation of the C.T.C. system is shown in Figs. 1 and 2, with, in the latter case, particulars of the signals and the track circuits which control them. For the sake of clearness, the signals are shown as ordinary semaphores, but in reality the regulation French pattern signals are, of course, used. The system of C.T.C. adopted is similar to the Westinghouse time code system used at Stan-

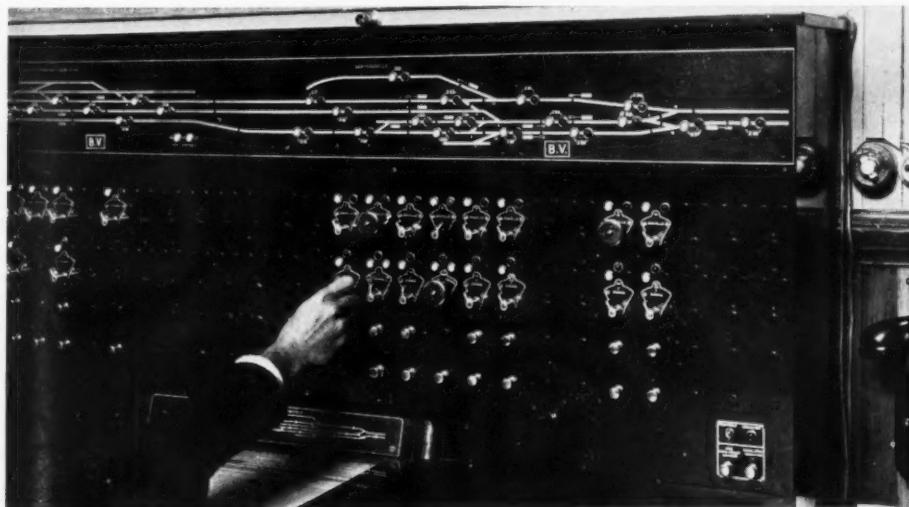


Fig. 3—The control machine at St. Lazare station, showing automatic graph recorder in centre

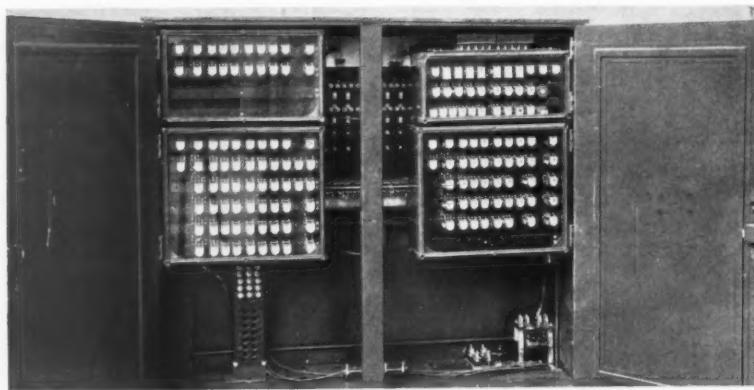


Fig. 4—Back view of control machine, showing relay groups

more (see THE RAILWAY GAZETTE for March 17, 1933), in which only two line-wires are required between the central apparatus and that out on the line. The various orders or controls are sent by means of trains of impulses, some short and others long, arranged in a pre-determined order; these are received by suitable selective relay mechanisms, placed where required, and are there translated, as it were, into the desired practical results, as in the reversal of a pair of

points or the clearing of a signal. Similar trains of impulses are sent from the line to the central apparatus, when required, to indicate the completion of a movement, the occupation of a track section, the disturbance of a piece of apparatus, or any other occurrence, influencing the working or safety of the installation.

Method of Operation

The frame, or despatcher's apparatus (Fig. 3), carries a diagram of the lines concerned, with track occupation lamps, and below it are seen the necessary keys, corresponding to the levers of the older signalling systems, with certain indication lamps and push-buttons. To operate some function along the line, the de-



Fig. 5—Electric point machine with dual control handle. Note letters "N" and "R" at point tongues



Fig. 6—Sartrouville station, looking towards Mantes

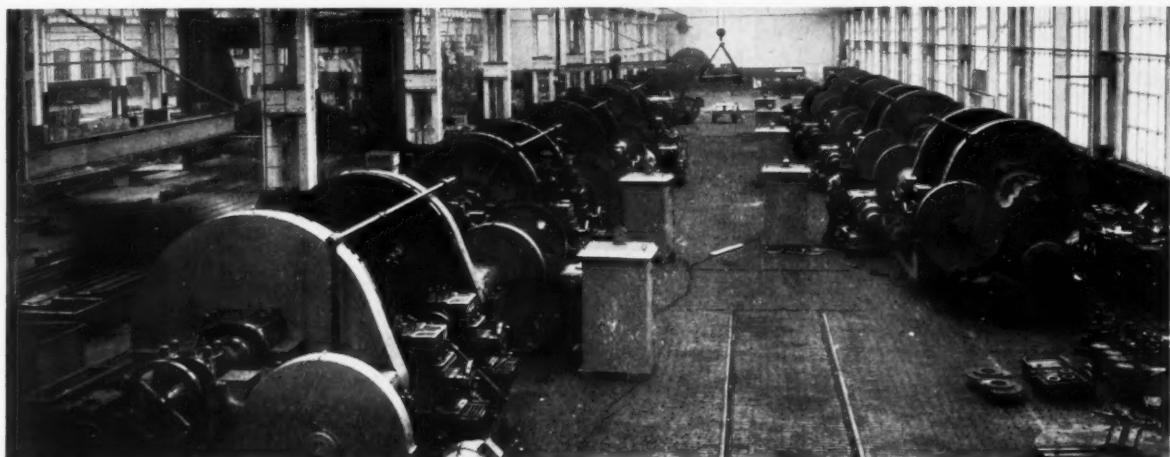
spatcher moves the relative key to the appropriate position and depresses the transmitter button, after which the code impulses are automatically sent out and, when the outdoor apparatus has responded, an answer-back code is received and causes the indicating lamp concerned to light up. Should a code group of impulses be in course of transmission, and circumstances arise necessitating the forwarding of another, the latter group is held automatically in reserve by the apparatus until the sending of the first is completed, when the stored code of impulses is at once sent over the line circuit.

An interesting feature of the control machine is the 28 pen graphic recorder which makes a continuous record of the condition of each track circuit section. The working on the centre track is controlled by a traffic direction

lever. The whole of the apparatus at St. Lazare, with the exception of the batteries, is contained in the control machine, while, out on the line, there are relay and apparatus shelters. Between Paris and Asnières the line conductors are in cable, but from Asnières to Sartrouville open line wires are used. The electric point machines are equipped for dual-control operation, but some points are regularly operated by hand from ground-frame levers, next to which telephones are placed for communicating with the despatcher, who releases the levers for shunting operations when required, and the necessary safety conditions are fulfilled. This pioneer C.T.C. installation on the Continent has been carried out by the Cie. Gen. de Signalisation, Paris and Sévran, and its adoption has, among other economies, enabled three signalboxes to be closed.

NEW CRAVEN LOCOMOTIVE WHEEL LATHES FOR THE L.M.S.R.

Ten of these machines, with journal turning attachment, are being installed in certain of the company's repair works



TEN lathes of the type illustrated and described here-with have recently been supplied to the London Midland & Scottish Railway. As will be seen, they are not of extra heavy design and construction but belong to the type commonly known as running shed lathes. They are adapted to turn wheels ranging from 2 ft. 9 in. to 7 ft. 6 in. diameter on tread, and each is fitted with a journal-turning rest at the rear. Under test, one of the machines completely turned and finished a pair of 6 ft. 6 in. diameter locomotive wheels in a floor to floor time of 48 minutes, but allowing for the usual stoppages which occur in almost every production programme, an average floor to floor time for a pair of wheels of this diameter, taking a cut of, say, $\frac{1}{4}$ in. to $\frac{3}{8}$ in., would be about one hour.

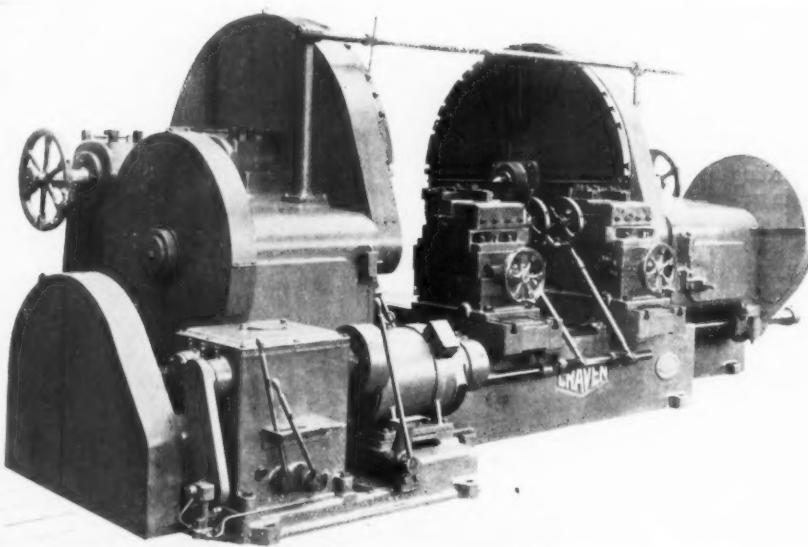
The general design of the machine is straightforward and free from complicated mechanisms, and the following may be regarded as its outstanding features:—Right-hand headstock movable along the bed by motor-driven screw and nut. This motor is built in the bed of the machine; ball-thrust washers fitted to spindles to take end pressure; main driving by constant-speed a.c. motor through a six-speed gear box mounted on a base in front of the fixed headstock. The faceplate pinion is located just below the centre line of the spindle, a position

which produces the least upward thrust on the bearing caps during cutting. All main driving gears are of high-tensile steel with a 20 deg. pressure angle. The drive to the loose headstock is transmitted through a large diameter layshaft, running through the centre of the bed and driving the faceplate pinion through a pair of spur reduction gears. Each faceplate has a pocket cast in it to receive the outside crankpins.

The drive to the fixed headstock may be disengaged by a sliding pinion operated by a hand lever at the front of the machine, so that the pockets in the faceplate can be arranged to take crankpins of either right or left-hand lead and at any angular position. Hand motion is provided to both the cross and tool slides, the feed being applied to the tool slide by an oscillating link and ratchet mechanism from the feed shaft at the front. The slide-ways are of massive proportions, with adjustable steel wearing strips.

One "lighthouse" type journal turning rest is provided on each lathe, arranged on the rear bedways and adjustable along the bed by hand through rack and pinion. Longitudinal traverse to the bottom slide is by hand or power. The in-feed to the tool slide is by hand, the tools being held in position by steel stirrups. The complete journal turning attachment is mounted on a separate

baseplate at the rear of the main machine. For journal turning, the drive to the wheel-set is obtained from a separate constant speed motor, mounted vertically on a worm reduction unit at the rear of the machine. Transmission is through a six-speed gear box to an adjustable belt pulley, the final drive to the wheel-set being by flat belt passing over the tread of the wheel at the fixed headstock end. The driving pulley is adjustable to and from the centre of the machine according to the diameter of wheels and the belt tension required. The actual turning of the journals is always carried out at the movable headstock end of the machine, the wheel-set being turned round to complete both journals. Four spoked drivers of an improved design are fitted to each faceplate and are adjustable independently to and from the centre by screw and half-nut. Provision is made for cross adjustment of the drivers, thus enabling them to be readily applied to wheels with any number of spokes. Special



One of the Craven wheel lathes supplied to the L.M.S.R. for repair shop work

attention has been paid to the lubrication of all working parts and this is carried out by means of "one-shot" pumps and oil-gun nipples.

A PORTABLE JACK FOR REMOVING BRAKE CYLINDERS FROM WAGONS

THE accompanying illustrations show a lever-operated portable jack in use in the Moghalpura carriage and wagon shops of the North Western Railway, India, where it has been designed and built to keep pace with the belt system of progressive repairs to the vacuum cylinders of wagons. The jack, running on four wheels, is pushed forward by one man under the brake cylinder which is to be dropped, and the head is then raised by depressing the lever, so as to take the weight of the cylinder, which a second man disconnects from the frame. Fig. 1 shows a cylinder being withdrawn from a wagon on the jack.

Special racks have been provided for the storage of cylinders adjacent to the vacuum testing line and the method of transferring a cylinder to the rack is shown in Fig. 2. After a number of cylinders have been placed in the racks, they are removed, six at a time, on

3-wheeled petrol-driven trucks, with specially adapted bodies, to the vacuum brake shop, where they are overhauled and repaired. Replacing the cylinders under the wagons is accomplished by reversing the removal process.

The jack can be used only where the ground is more or less flush with the top of the rail, but this is no disadvantage as it is intended for use only in shops where this condition exists.

So successful has this portable jack proved that four are already in service; and with a daily overhauling capacity of some forty or fifty wagons, they form a strong link in the chain of progressive repairs to wagons on the North Western Railway. The work of removal and replacement can be carried out by two men instead of four, and the operation takes about one-tenth of the time required by manual methods.

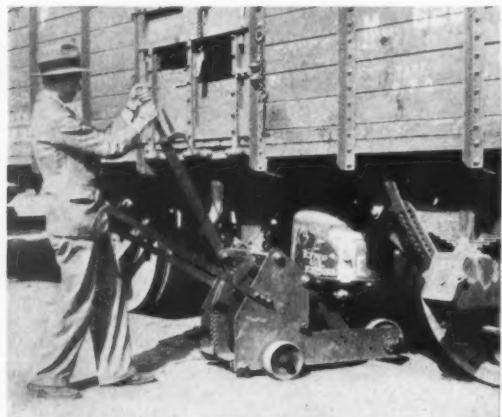


Fig. 1 (left)—Lowering a cylinder on to the jack

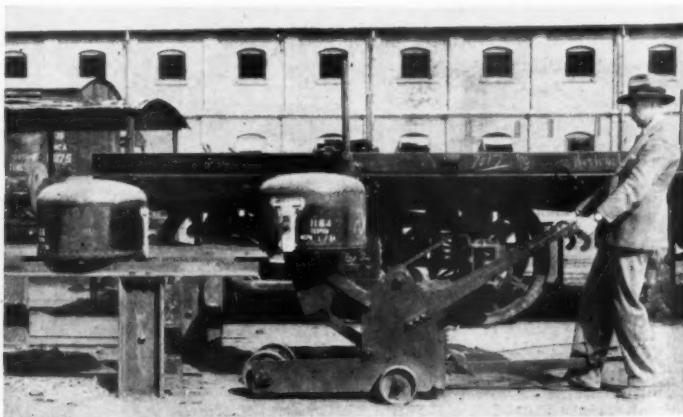


Fig. 2 (right)—The cylinder removed and being conveyed to the storage rack prior to testing

RAILWAY NEWS SECTION

PERSONAL

G.W.R. APPOINTMENTS

We are officially informed of the following appointments:—

Mr. C. R. Dashwood, Assistant Accountant, to be Assistant General Manager.

Mr. T. B. Cox, Assistant to Chief Accountant, to be Assistant Accountant.

Mr. H. T. Forth, Assistant to Chief Accountant, to be Assistant Accountant.

Mr. E. O. Sear, Accountant's Office, to be Assistant to Chief Accountant.

Mr. S. B. Taylor to be Chief Clerk to the Secretary, *vice* Mr. J. L. Edwards, retired.

NEW L.N.E.R. DIRECTOR

Lord Burghley, M.P., was, at a board meeting on May 31, elected a Director of the L.N.E.R. Lord Burghley was President of the Cambridge University Athletic Club, and Captain of the British Olympic team, also holding one Olympic and eight British Championships. He has been Conservative M.P. for the Peterborough Division since 1931, and Parliamentary Private Secretary to Lord Hailsham, as well as Chairman of the Junior Imperial League.

L.N.E.R. STAFF CHANGES

The L.N.E.R. announces that Mr. J. Calder, General Manager for the Scottish Area, will shortly retire under the age limit and be succeeded by Mr. G. Mills, Goods Manager, Southern Scottish Area.

The company also announces the following appointments:

Mr. A. E. Sewell, Assistant Goods Manager, Southern Area, to be Goods Manager, Southern Scottish Area, in succession to Mr. Mills.

Mr. H. G. Rampling, Chief Assistant to the District Operating Superintendent, Edinburgh, to be Assistant District Superintendent, Norwich, in succession to Mr. W. R. Magnus, who died recently.

Mr. W. E. Green, to be Assistant District Superintendent, King's Cross.

Mr. C. Hartman, to be Assistant District Superintendent, Nottingham.

Mr. W. Wells-Hood, Works Manager, Faverdale, to be Works Manager, Faverdale and Shildon.

Mr. B. H. Smith, Chief Technical Assistant, Electrical Engineer's Office, King's Cross, to be Assistant to Electrical Engineer (Power and Lighting).

Mr. F. H. Eliot, Chief Draughtsman, Electrical Engineer's Office, King's Cross, to be Chief Draughtsman and Technical Assistant.

Mr. Cyril R. Dashwood, O.B.E., who has been appointed Assistant General Manager, Great Western Railway, was born in June, 1888. He commenced his career in the Locomotive and Carriage Department at Swindon in June, 1902, and was transferred to the Chief Accountant's Office in February, 1908. In April, 1916, he was appointed Book-keeper, and in January, 1919, Assistant Accountant, in the Audit Section. Mr. Dashwood was Secretary to the Railway Accountants' Committee dealing

way, which post he now relinquishes. It is interesting to record that Mr. Dashwood was a Brunel Medallist at the London School of Economics in 1910.

Signor Cesare Oddone, who was Director General of the Italian State Railways for nearly seven years and under whose immediate management the remarkable development of the State Railways began and was so successfully carried on, has been nominated by the King of Italy a Member of the Senate in recognition of eminent services rendered.

BRITISH RAILWAY OFFICERS' AUDIENCE WITH THE KING OF THE BELGIANS.

On the occasion of a visit by representatives of the British and Dutch Press to Belgium during Whitsuntide, the following railway officials and staff of the Southern and L.N.E. Railways were accorded an audience by His Majesty King Leopold III at the Royal Palace at Brussels:—

L.N.E.R.—Mr. A. L. Gibson, Continental Traffic Manager; Mr. J. R. Hind, Information Agent; Mr. F. Goodricke, Assistant Advertising Manager; Mr. L. H. K. Neil, Assistant to Continental Traffic Manager; and Mr. L. Potts, Continental Agent.

Southern Railway.—Mr. E. C. Cox, Traffic Manager; Mr. C. Grasenrann, Public Relations and Advertising Officer; Mr. E. F. E. Livesey, Assistant for Special Continental Work; Mr. H. C. King Stephens, Continental Agent; and Mr. G. R. Walter, Advertising Department.

Photo by

(Railway Gazette

Mr. Cyril R. Dashwood, O.B.E.,

Appointed Assistant General Manager, Great Western Railway

with the Railway Companies (Accounts and Returns) Act, 1911, and to the Accountants' Permanent Committee which was set up when the former Committee ceased to exist. In August, 1914, he was made Secretary of the Accountants' Sub-Committee of the Railway Executive Committee, and, from its inception, of the Compensation Accounts Sub-Committee which dealt with the Railway Companies' claims under the Government control agreements. He was appointed an Officer of the Order of the British Empire for his services in connection with the last-named committees. In September, 1922, he was appointed Assistant Accountant of the Great Western Rail-

way, began his railway career in the Chief Accountant's office at Paddington in April, 1907. After gaining considerable experience in the Engineering, Signal, and Electrical Section, he was in December, 1921, made assistant in that Section, and in March, 1924, was promoted to take charge of the section dealing with the accounts relating to road transport and canals. In August, 1925, he was appointed clerk in charge of the Engineering Accounts Section, which post he has held until his recent promotion. Mr. Forth has carried out a great deal of special work in connection with the various road transport undertakings in which the Great Western Railway has

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become financially interested. In 1930 he was appointed Assistant to the Chief Accountant.

Mr. E. O. Sear, who, as announced above, has been appointed Assistant to the Chief Accountant, Great Western Railway, Paddington, is 41 years of

the Capital Accounts section and appointed Book-keeper, Chief Accountant's office, the position he now relinquishes to take up his new duties as Assistant to the Chief Accountant.

Mr. J. L. Edwards, who, as just announced, is retiring this month from

1928 was awarded by the University the Sir Ernest Cassel travelling scholarship, tenable for one year in America. In fulfilment of this scholarship he studied transport and finance at Columbia University, worked with American business houses, and travelled widely in the States, Canada, and



Mr. H. T. Forth,
Appointed Assistant Accountant,
G.W.R.

age, and entered the G.W.R. service in 1907 as a junior clerk at Paddington. Apart from three years' war service, he has been continuously engaged there. In 1925 he was placed in charge of the Joint Lines and Stations section, and



Mr. E. O. Sear,
Appointed Assistant to the Chief Accountant,
G.W.R.

the position of Chief Clerk to the Secretary, Great Western Railway, has held that position since 1929. Some 46 years ago he entered the service of the Alexandra Docks and Railways Company at Newport; was appointed Cashier and Assistant to the Accountant of that Company in 1903, and Assistant Accountant in 1917. After the amalgamations which followed upon the passing of the Railways Act, 1921, he was responsible for the re-organisation of the dock accounting of the South Wales docks in accordance with Great Western practice. Later, he was transferred to the Chief Accountant's office at Paddington, as head of the department dealing with the dock accounts for the Great Western Railway, which position he held up to the time of his promotion to the Secretary's office.

Mr. S. B. Taylor, who, as announced above, has been appointed Chief Clerk to the Secretary, Great Western Railway, entered the company's service in 1915 in the registration office at Paddington, where he obtained experience of all phases of the work of that office. In 1921, he became a member of the Secretary's personal staff, and assisted with the work involved by the amalgamations and absorptions under the Railways Act, 1921. In 1926, he was appointed head of the section dealing with banking and finance and, except for a year during which he was temporarily attached to the company's New York office, he occupied this position up to the date of his new appointment. Mr. Taylor is a Bachelor of Commerce of the University of London, and in



Mr. J. L. Edwards,
Chief Clerk to the Secretary, G.W.R.,
1929-34

Mexico, gaining valuable experience of American commercial methods and business psychology. He is an Associate of the Chartered Institute of Secretaries, an Associate Member of the Institute of Transport, a Fellow of the



Mr. S. B. Taylor,
Appointed Chief Clerk to the Secretary,
G.W.R.

since 1927 has also been deputed to deal with expenditure matters in connection with the L.M.S.R.-G.W.R. and L.M.S.R.-L.N.E.R.-G.W.R. pooling arrangements. In October, 1932, Mr. Sear was transferred to the control of



Wing-Comdr. A. H. Measures, O.B.E..
Appointed Superintendent, Railway Air Services
Limited

Royal Economic Society, and a representative of Great Western members on the committee of the Railway Students Association of the London School of Economics. He is also a London County Council lecturer in

transport, finance, and accounting. He was captain of the G.W.R. (London) association football team from 1917 to 1919.

Wing-Commander A. H. Measures, O.B.E., M.I.Mech.E., who, as we announced last week, has been appointed Superintendent, Railway Air Services Limited, was from 1899 to 1906 with Simpson & Co. Ltd., Engineers, of Pimlico and Newark-on-Trent, first as an apprentice and then as an engineer. During the succeeding three years he was employed as an engineer on the staff of John I. Thornycroft & Co. Ltd. and then went to Eastleigh as works engineer, Humphreys Gear & Motor Company, until, in 1911, he was appointed Assistant Manager, Winchester Motor Company. A year later he was appointed to the Royal Aircraft Factory, as Engineer-in-charge of airship engines on trial. In 1912 Mr. Measures joined the Air Battalion, Royal Engineers, being transferred to the Royal Flying Corps in 1913. Having gone to France in 1914 with the First British Air Squadron, he served there till 1916, and rose to be Major, R.A.F. Technical Equipment and Supplies. He was awarded the French *Médaille Militaire* for distinguished service in the retreat from Mons, and was one of the first officers to receive the O.B.E. In 1916-17 he was Officer Commanding Chelsea Aircraft Repair Depot, being promoted Lieut.-Colonel in the latter year and appointed Officer Commanding Western Aircraft Repair Depot, 1917-18. While in command of the Inland Repair Depot, 1918-20, his designation was changed to Squadron-Leader, R.A.F., and for the next four years he was Chief Technical Officer, R.A.F., Egypt, and O.C. Engine Repair Depot, Cairo, 1924-25. Squadron-Leader Measures spent the four following years as Officer in charge of Training, School of Technical Training, Manston, Kent, and Officer Commanding the school. He retired from the R.A.F. in 1930 with the rank of Wing-Commander, and was appointed Senior Technical Assistant to the Chief Engineer, Imperial Airways Limited, where he was in charge of the engineering administration. After acting as Divisional Engineer in charge of aircraft at Kisumu, East Africa, and conducting acceptance trials to South Africa, 1931-33, he became Manager, No. 3 Operating Division, Imperial Airways and Indian Trans-Continental Airways at Karachi in 1933, returning in February last.

We are glad to report that Mr. J. H. Follows, formerly Vice-President of the Executive, L.M.S.R., is now recovering from a serious eye operation.

KING'S BIRTHDAY HONOURS

Viscount

Baron Charles Cheers Wakefield, C.B.E., Chairman of C. C. Wakefield & Co. Ltd. For public services, especially to civil aviation.

Barons

Sir Hugo Hirst, Bt., Chairman and Managing Director, General Electric Co. Ltd. For public services.

Mr. Gerald Walter Erskine Loder, LL.B., J.P., D.L., Chairman, Southern Railway Company, President of the National Union of Conservative and



Mr. Gerald W. Erskine Loder, LL.B., J.P., D.L..

Chairman of the Southern Railway Company, who has been raised to the Peerage

Unionist Associations, 1924-26, M.P. for Brighton 1889-1905. For political and public services.

Knights Bachelor

Brayhay, Mr. Maurice William, M.Sc., Assoc.M.Inst.C.E., Agent, Bombay, Baroda & Central India Railway Company.

Cherry, Mr. John Arnold, C.I.E., Chairman of the Port Commissioners, Rangoon, Burma.

Craven, Commander Charles Worthington, O.B.E., R.N. (Retd.), Managing Director, Vickers-Armstrongs Limited.

Matthews, Mr. Ronald Wilfred, J.P., Director, London & North Eastern Railway Company, and Turton Brothers & Matthews Limited, Sheffield, for political and public services in that city.

Rhodes, Brigadier-General Godfrey Dean, C.B.E., D.S.O., R.E. (Retd.), General Manager, Railways and Harbours, Kenya and Uganda.

C.B. Civil Division

Brown, Mr. William Barrowclough, C.B.E., Assistant Secretary, Board of Trade.

C.M.G.

Elmslie, Mr. Noel, H.M. Senior Trade Commissioner in the Union of South Africa.

Maxwell, Colonel Geoffrey Archibald Prentice, D.S.O., M.V.O., M.C., R.E. (Retd.), General Manager, Railways, Tanganyika Territory.

G.B.E. (Civil Division)

Anderson, Sir Alan Garrett, K.B.E., Director of the London Midland & Scottish Railway Company, and a former President of the Chamber of Shipping and of the Association of British Chambers of Commerce. Has rendered valuable services to Government Departments.

C.B.E. (Civil Division)

de Havilland, Captain Geoffrey, F.R.Ae.S., Director and Designer, the de Havilland Aircraft Company.

Pendred, Mr. Loughnan St. Lawrence, Editor-in-Chief of *The Engineer*, Past President of the Institution of Mechanical Engineers.

O.B.E. (Civil Division)

Baker, Mr. Robert, Manager and Chief Engineer, Kowloon-Canton Railway, Hong Kong.

Bryant, Mr. Arthur Alexander, Assistant General Superintendent, The Tata Iron & Steel Co. Ltd., Jamshedpur, Bihar and Orissa.

Daniels, Mr. Mark, Controller, India Store Department, London.

Hitchcock, Mr. Harold George, M.B.E., formerly Chairman of the Railway Commission, Mauritius. For public services.

Mason, Mr. Henry, Chief Accountant, Gold Coast Railway.

Mathieson, Mr. Llewellyn Charles Fletcher, Railway Concentration Officer, Army Headquarters, India.

M.B.E. (Civil Division)

Gowardhan Lal, Mr., Clerk, Railways and Harbours, Kenya and Uganda.

Jackson, Mr. Lawrence Charles, Staff Officer, Grade II., Ministry of Transport.

Mostafi, Mr. Probodh Chandra, Civil Engineer, The Tata Iron & Steel Co. Ltd., Bihar and Orissa.

Stone, Mr. Thomas Henry, Chief Draughtsman, Engineering Department, Railways and Harbours, Kenya and Uganda.

Woodford, Mr. John Edwin, Senior Staff Officer, Office of the Traffic



Left: "The 'Aerolite,'" built in 1851 for the N.E.R. and in service until 1933, and the "Columbine," built at Crewe in 1845 for the L. & N.E.R.—described on page 983 in our last week's issue—beside a 4-6-2 L.N.E.R. locomotive, on their arrival at York on June 1 to be placed in the Railway Museum

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Commissioners for the North Western area.

Imperial Service Order.

Jansz, Mr. Gordon Edward William, Chief Accountant, Government Railway, Ceylon.

British Empire Medal (Civil Division)

Hassan, Abu Bakr, Assistant Locomotive Inspector, Sudan Railways.

Mr. Gerald Walter Erskine Loder, LL.B., J.P., D.L., who has been elevated to the peerage, was elected Chairman of the Southern Railway Company in May, 1932. He is the fourth son of the late Sir Robert Loder, Bart., M.P. for New Shoreham. Mr. Loder was educated at Eton and Trinity, Cambridge, and became a barrister at the Inner Temple in 1888. Mr. Loder was Conservative Member for Brighton from 1889 to 1905. Until 1892 he was private secretary to Mr. C. T. Ritchie, then President of the Local Government Board. From 1896 to 1901 he was private secretary to Lord George Hamilton, Secretary of State for India. In 1896 he was unanimously elected a Director of the London, Brighton & South Coast Railway, and was Chairman of that company at the time of amalgamation at the end of 1922. In 1905 Mr. Loder became a Junior Lord of the Treasury. Upon the formation of the Southern group of railways in 1923, he was elected Joint Deputy Chairman of the new Board, a post he held until his election as Chairman in 1932. He was President of the Royal Horticultural Society from 1929 to 1931 and of the Royal Arboricultural Society from 1926 to 1927. In 1890 Mr. Loder married Lady Louise de Vere Beauclerk, eldest daughter of the tenth Duke of St. Albans. Mr. Loder's son is the Unionist Member of Parliament for Lewes.

Mr. John Strachan, late Director of Transport, Trinidad, and formerly General Manager, Federated Malay States Railways, left estate valued at £7,200 (£4,888 net).

INDIAN RAILWAY STAFF CHANGES.

Mr. E. B. Robey has been confirmed as Chief Engineer, State Railways, as from January 22 last. He will continue to be employed as Chief Engineer on the E.B.R.

Mr. J. C. Barton has been appointed to officiate as Chief Traffic Manager, G.I.P. Railway, as from April 9, *vice* Mr. J. H. F. Raper, proceeded on leave.

Mr. S. H. P. Lincke, has been appointed to officiate as Controller of Stores, G.I.P. Railway, with effect from April 3, *vice* Mr. O. G. Edwards proceeded on leave.

Messrs. H. G. Salmond, Officiating Deputy Agent (Works) and I. T. St. C. Pringle, Officiating Deputy Agent (Personnel), E.B.R., have been confirmed in their appointments as from March 30 and April 1, respectively.

The L.N.E.R. Northern Belle Train Cruise

(See illustrations opposite)

The first of the four Northern Belle train cruises which the London & North Eastern Railway Company is running this summer left King's Cross at 9.0 p.m. last Friday with a complement of sixty passengers. Sir Charles Batho, Director, Mr. H. N. Gresley, C.B.E., Chief Mechanical Engineer, Mr. C. J. Selway, Passenger Manager, Southern Area, Mr. V. M. Barrington Ward, Superintendent, Western Section, Southern Area, Mr. F. Warriner, District Superintendent, King's Cross, Mr. J. E. Ryan, Hotels Superintendent, Southern Area, and Mr. F. Goodricke, Assistant Advertising Manager, were among those present to witness its departure.

It is significant of the popularity of this innovation that a number of the passengers are repeating the pleasurable experience they enjoyed last year. We understand that the first three cruises are fully booked and only a few cabins are available on the fourth cruise which leaves King's Cross on Friday, June 29.

As already recorded, the Northern Belle cruise train weighs over 500 tons and is composed of 14 vehicles, including, besides six sleeping cars of the most modern type, shower baths, a

lounge car, cocktail bar, hairdressing saloon, restaurant cars, kitchen car, staff quarters, and baggage car. It carries a staff of 28.

Notwithstanding the many encomiums received by the company upon the achievements of the cruise train last year, the arrangements for this season's cruises are even better as the itinerary and general facilities are now based on actual experience.

The first day, Saturday, was spent at Harrogate and Ripon, where Mr. S. T. Burgoyne, Passenger Manager, North Eastern Area, was present to witness the arrival of the train. Sunday was devoted to a well-arranged tour through the Lake District; Monday to Edinburgh; Tuesday to Aberdeen and Deeside. On Wednesday the programme provided for a steamer trip on Loch Lomond and thence by the cruising train up the West Highland line to Mallaig. Yesterday (Thursday) the southward journey was booked to commence, and included a steamer trip round the Kyles of Bute. The cruising train is due to arrive at King's Cross at 10.45 a.m. to-day, Friday, on the completion of its first tour.

RAILWAY AND OTHER REPORTS

Bengal-Nagpur Railway.—The board has declared from the reserve an interim half-yearly dividend in respect of the year ended March 31, 1934, at the rate of 5s. per £100 ordinary stock, payable on July 2, 1934, making, together with the guaranteed interest of £1 15s. per £100 ordinary stock then due, a distribution of £2 per £100 ordinary stock, less income tax at 4s. 6d. in the £.

A.B.C. Coupler & Engineering Co. Ltd.—The loss for the year to September 30, 1933, after crediting interest and dividends, was £9,887, and the total debit forward £25,771. The directors have transferred £3,086 from reserve to credit of profit and loss account, thereby reducing this debit to £22,685.

British Electric Traction Co. Ltd.—As indicated in our issue of May 18, the directors have recommended that for the year ended March 31, 1934, a dividend of 5 per cent. be paid in cash on the deferred ordinary stock, leaving a balance for further appropriation of £90,843. They recommend that out of this balance £44,636, equal to 10 per cent. on the deferred ordinary stock, be capitalised and applied in paying up in full 44,636 deferred ordinary shares of £1 each, which will be distributed among the holders of the deferred ordinary stock. These shares will be converted subsequently into deferred ordi-

nary stock. Subject to the approval of this proposed distribution, preference stockholders are entitled to a further dividend of 2 per cent., amounting to £14,255, making a total dividend of 8 per cent. for the year. These further appropriations will absorb £58,891, leaving £31,952 to be added to undivided profits account, making that account £1,241,231.

Hants & Dorset Motor Services Limited.—The report for the year ended March 31, 1934, of this company, which is controlled by the Southern Railway Company and by Tilling & British Automobile Traction Limited, shows that the net profit, after providing for depreciation reserve and directors' fees, amounted to £39,977 (compared with £37,583 for 1932-33). Adding £11,129 brought forward gives a total of £51,106, out of which have been paid an interim dividend of 4 per cent. on the ordinary shares (absorbing £8,000) and a dividend of 6½ per cent. for the year on the cumulative preference shares (absorbing £9,750). Out of the balance of £33,356 the directors recommend payment of a final dividend of 6 per cent. on the ordinary shares, making 10 per cent. for the year, a bonus of 2½ per cent. on the ordinary shares, the appropriation of £2,500 to general reserve, and the grant of £1,500 bonus to the employees, leaving £12,356 to be carried forward.

Interurban Railways in North America

(See editorial note on page 1010)

The fastest railway service of its kind in the world is that operated by the electrified Chicago, North Shore & Milwaukee Railroad of the U.S.A. between Chicago and Milwaukee, along the north shore of Lake Erie. The limited express service from Milwaukee to Chicago runs in the following times:

Distance	—	Hourly Through-out Day	Chicago Limited	Prairie State Special	Chicago Special
miles			a.m.	a.m.	p.m.
0·00	MILWAUKEE	.. .. .. .. dep.	6.00	8.00	8.00
0·97	National Avenue	.. .. .. ..	6.04	8.04	8.04
2·80	Harrison	.. .. .. ..	6.12	8.12	8.10
22·88	Racine	.. .. .. ..	6.32	8.32	8.29
32·89	Kenosha	.. .. .. ..	6.42	8.41	8.37
41·59	Zion	.. .. .. ..	6.52	*8.48	*3.50
47·93	Edison Court	.. .. .. ..	6.59	8.54	8.56
50·89	North Chicago Junction	.. .. .. ..	7.05	*8.59	*4.01
71·92	Niles Centre	.. .. .. .. arr.	7.25	*9.18	*4.20
76·86	Howard Street	.. .. .. ..	7.32	9.25	9.18

* Passing times.

These times are taken from the working time-tables of the Chicago, North Shore & Milwaukee R.R., and some of them are truly astonishing. The Harrison-Racine, Racine-Kenosha, Kenosha-Edison Court, and Edison Court-Howard Street stages, even allowing stops of no more than 15 sec. duration, call for successive start-to-stop speeds, in the case of the 8·00 p.m. Chicago Special, of 64·3, 75·0, 70·8 and 62·0 m.p.h., making a total of 74·06 miles in 68 min. with three intermediate stops. The 8·00 a.m. Chicago Limited covers the same distance in 73 min. with three stops. Even the hourly limited trains all run from Harrison to Racine, 20·08 miles, in 20 min., Racine to Kenosha, 10·01 miles in 10 min., and North Chicago Junction to Niles Centre, 21·03 miles, in 20 min., start-to-stop in each case and making no allowance for the duration of the stops. From Howard Street access to the heart of Chicago is over the street lines of the Chicago Rapid Transit Company with slow running and numerous stops, adding from 27 to 29 min. to the duration of the whole journey. Parlour cars and dining cars are run in these trains. The ordinary limited trains take 2 hr. for the complete journey of 95 miles from Milwaukee to Roosevelt Road, Chicago, with 15 intermediate stops.

The railway referred to is one of a large number of "interurban" railways in the North American Continent, some of which have attained to considerable dimensions. For the most part they are electrically-operated railways, worked on the overhead system, from which they derive the popular title of "trolley" lines. In many cases they have developed, first from the tramway systems, or street railways of large cities, which have been extended out to neighbouring districts as urban railways, and then have been linked together as interurban railways. At one time the New York State

system comprised 3,500 miles of track, but highway competition has compelled the abandonment of its interurban lines, leaving only the street and urban lines of Syracuse, Utica, Rochester and elsewhere. The Illinois Terminal Railroad, with 430 miles of line, has a main line 171½ miles in length, from St. Louis to

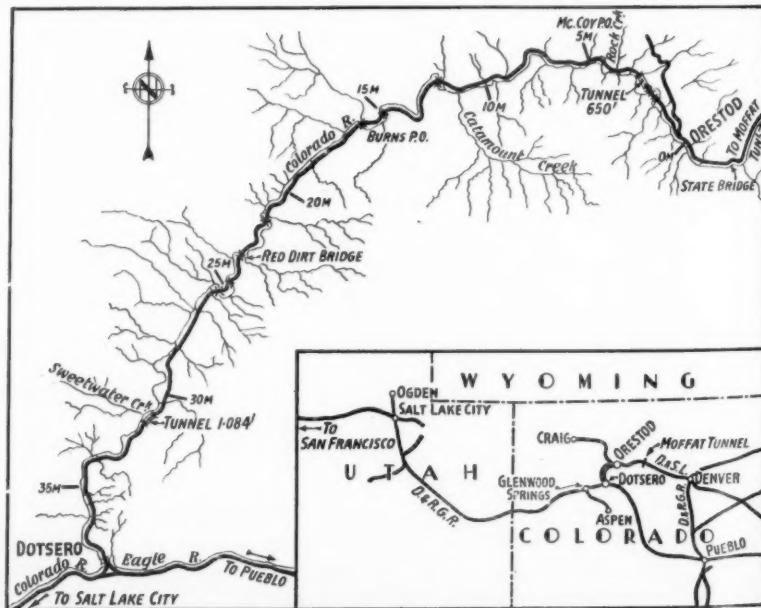
short distances between stops are covered at speeds round about 60 m.p.h. from start-to-stop. The slowing down of overall speeds is due to running through the large towns and cities on street-car tracks. The Indiana Railroad system, with 770 miles of line, including the city system of Fort Wayne, has main lines 135, 123 and 117 miles in length, connecting Indianapolis with Fort Wayne and Louisville, Kentucky; over this as over many other interurban lines, freight and U.S. Mail are carried, in addition to passengers. Sixty m.p.h. bookings between stops appear in the time-tables of this system also, as in that of the Chicago, South Shore & South Bend and other similar lines.

Many of the interurban railways are linked together; it was possible at one time to travel from Boston to Philadelphia and Wilmington, via New York, by associated trolley routes, and but for the absence of certain short connecting links, through transit by interurban railways would have been possible over the journey of nearly 1,000 miles between New York and Chicago. Many of the interurban American lines meet a real need, however, combining, as they do in a measure, door-to-door with long distance transport in a comfortable and speedy way, and despite road competition, they appear, in certain States at least, to have become a permanent institution, unaffected by the prevailing abandonment of local street tramways.

A New American Trans-continental Route

A cut-off that will shorten the distance by rail between Denver, Salt Lake City, and the Pacific Coast by 175 miles is now under construction by the Denver & Rio Grande Western Railroad and is expected to be opened

this month. The existing route of this company between Salt Lake City and Denver makes a considerable detour by reason of the presence between these points of the Colorado Rockies. At Dotsero, only some 100 miles direct



from Denver, the line swings abruptly southwards to Pueblo, then continues north for a further 120 miles to that city. The distance by rail from Dotsero to Denver is thus increased to 342 miles. At Dotsero, however, the Denver & Rio Grande Western is within 38 miles of Orestod on the Denver & Salt Lake Railway. The distance from Orestod to Denver by this route, which in the Moffat tunnel, possesses the most direct passage through the mountain barrier, is only 129 miles. The new cut-off, which is 38.1 miles in length, links Dotsero with Orestod, following the comparatively easy route provided by the valley of the Colorado River.

When the line is completed, D. & R.G.W. trains from Denver to Salt Lake City and Ogden, both of which points are junctions with routes to the Pacific Coast, will travel from Denver to Orestod over the Moffat tunnel route of the D. & S.L.R. Entering the cut-off here, they will follow it to rejoin their own metals at Dotsero. There will also be a through service from Denver to San Francisco provided by the Chicago, Burlington & Quincy Railroad, whose express The Aristocrat will begin running through from Chicago in June.

Details of the cut-off appeared recently in our American contempor-

ary, the *Railway Age*. In spite of the mountainous nature of the country traversed, the maximum gradient against eastbound traffic is 1 in 203, with the exception of a short stretch at 1 in 143.

There are two tunnels, of 1,084 ft. and 650 ft., and ten bridges, of which nine span the Colorado. The sinuosities of this river have entailed considerable stretches of severe reverse curvature in places. The cut-off is single track throughout, with no intermediate stations, but there are sidings at several points for the convenience of the numerous ranches in the Colorado Valley.

Indian State Railways Annual Dinner

The annual Indian State Railways' Dinner was held at the Café Monica on June 4, with a considerably better attendance this year. Mr. J. R. D. Glascott, C.I.E., late Agent of the Burma Railways, was in the chair and others present were:

Sir Francis Couchman, Col. Sir Gordon Hearn, Messrs. E. J. Buckton, A. M. Greene, Huddlestone, D. S. Burn, C. V. Bliss, J. F. Costello, E. Fraser, Dr. R. V. Clayton, Dr. R. T. L. Sladen, Lieut.-Colonel O. G. Edwards, Major Harrison, Captain F. W. Wilson, Captain H. J. Stone, Messrs. A. Peel-Goldney, P. A. Hyde, Rogers, W. J. Jones, W. G. Hornett, H. Lindars, V. H. Boalth, H. B. Holmes (Secretary), S. T. Gresham, J. Gresham, F. G. S. Martin, F. A. B. Jones, J. C. Cowen, A. Y. Williams, C. W. Clarke, G. E. Everett, G. L. Corrie, A. S. Stokes, A. H. Chilton, A. Gumbrell, A. T. Gordon, W. S. E. Edwards, C. Billington, A. C. Chatterjee, F. H. Farrow, S. Simpson, S. Taylor, Khanzada, F. M. Khan, W. R. R. More-Bennett, L. F. Jackson, J. S. Tritton, A. E. Hughes, B. F. Ellis, W. E. Gelson, F. S. Bond, R. J. Earle, A. E. Earle, G. A. Carter, Davenport, P. P. Kulkarni, R. Krishnaswamy, R. Subbiah.

In proposing the toast of The Indian State Railways the Chairman said: "It is a great honour to preside at this gathering. I appreciate it particularly because my official experience has been somewhat unique and different from that of most of you. For the greater part of my service I have been connected with a railway which started as a State railway, then passed over to a company and, towards the end of my career, again reverted to State management. In the second place I have been attached mainly, not to the broad gauge systems of India, but to a modest but highly efficient metre gauge railway. And finally this may be the swan song of a representative of the Burma State Railway for when the happy-go-lucky Burman has made up what he calls his mind to separate from India, or has separation imposed on him by Parliament, goodness only knows whether Burma will still have a State railway or any railway at all. We hope and trust that the Railway Board will see that our charming country is not wiped off the map of India or divorced from the general system of Indian railways.

"May I thank you on behalf of my brother officers in Burma for the won-

derful hospitality we always received in India and express to you our great regret that Indian railways do not give us a chance to return it. We can, I think, with modesty, and with confidence, claim that we have all been in the happy position throughout our service of doing constructive work, opening up new country, improving transport conditions and furthering the economic conditions of the Indian Empire. Our foundations have been well and truly laid and we need have no fear that our work will perish. And it is a satisfaction to feel that an organisation has been built which has the forces within it that will ensure continuance. While we do, and I trust may with confidence hope that the European element on the railways will not be unduly weakened, I think we can honestly say that, as far as has been possible, we have done our best to train up an Anglo-Indian, India and Burman staff which is capable, under supervision, of carrying on.

"I do not know whether your experience has been similar to mine, but I think it is not unlikely that it has been, when I refer to the extraordinary loyalty, amounting almost to personal affection, of the railway staff. It will be a bad day for our Indian railways if ever this spirit of *Camaraderie* disappears. While they have their grievances, legitimate or otherwise, there is no more reasonable body of men than railway employees.

"What the political future of India may be none of us can tell. But, as far as railwaymen are concerned, we shall still, I know, carry out our lonely surveys and constructions, maintain our open line and convey our passengers and goods with the same efficiency that has gained for Indian railways the high position which they occupy in the railway world. Let us not then give way to despondency. The officers of Indian State Railways have done, and are doing, great work for India. Let us look back to the past with gratitude and forward to the future with faith and confidence."

Subsequently Mr. Glascott briefly proposed the health of the Dinner

Secretary, Mr. H. B. Holmes, which was warmly greeted. In replying, Mr. Holmes thanked everyone for drinking his health with musical honours, and said how much he, and he was sure everyone, regretted the absence for the first time for very many years from the dinner of Mr. A. S. Jameson, the President of the Dinner, owing to ill-health.

Sentinel Railcars in Belgium

In an editorial note on page 776 of THE RAILWAY GAZETTE of May 4 we referred to the extreme economy of working Sentinel railcars in operation, and we are now able to give the figures of working costs of the three cars in service in the Liège Division of the Belgian National Railways. During 1933 they covered together a total of 345,458 km. (214,657 miles), or an average of 115,152 km. (71,552 miles) each. Below are details of costs per car kilometre:—

Wages	...	...	...	...	Fr. 0.92
Lubrication	...	...	...	...	" 0.06
Fuel	...	...	...	...	" 0.49
Water	...	...	...	...	" 0.01
Sundry charges	...	...	...	...	" 0.28
Preparation	...	...	...	...	" 0.12
Maintenance and repairs	...	...	...	...	" 0.49
Total					Fr. 2.37

At the current rate of exchange, namely, about 107 Belgian francs to the pound sterling, this works out at 8.54 pence per car-mile. At parity of exchange (175 fr. = £1), which for purposes of comparison of working conditions between Belgium and this country is a better guide, the cost per car-mile would be 5.22 pence.

NEW BOWLING GREEN FOR S.R. ATHLETIC CLUB.—The new bowling green and pavilion of the Southern Railway Athletic Club at Waddon was opened by Sir Herbert Walker, General Manager of the Southern Railway, on May 26. Sir Herbert was presented with a silver-mounted jack, suitably inscribed, as a memento of the occasion. Play on the new green was opened by Mr. Gilbert S. Szlumper, the Assistant General Manager. The inaugural match was followed by supper in the pavilion, at which Mr. Szlumper (the captain for the day) presided.

The German State Railway and Employment

Dr.-Ing. Max Leibbrand, a Director of the German State Railway Company, reviews the employment programme and indicates the trend of technical progress

(See editorial note on page 1011)

The German State Railway Company's programme of maintenance and development work and new constructions in support of the national campaign against unemployment is on a scale commensurate with the fact that the company is the largest customer of German industry. There is unlikely to be a return to such conditions as existed before the war, when for example, the capital expenditure of the Prussian and Hessian State Railways increased by about £31,000,000* in 1913 and the increase for the whole system now operated by the State Railway Company amounted to about £50,000,000 compared with only £2,300,000 expended on new constructions during the year 1932. Conditions have been radically altered, not merely by the development of road transport but also by the construction of new canals, electric power lines and long-distance gas transmissions. Nevertheless, the company spent about £47,500,000 more than actually required for the maintenance of operation from the beginning of the crisis in 1930 to the middle of last year simply to assist employment and, in pursuance of this policy, it was decided in July, 1933, to undertake a further programme of works involving the expenditure of another £28,000,000 during a period of 18 months. Later, it was decided to spend an extra £1,250,000 during the winter of 1933-34 and another £2,000,000 during the current year, bringing the total up to £31,250,000 or £70,000,000 including wages for normal track maintenance and workshops.

New Works and Maintenance

The distribution of the deliberately incurred expenditure, says Dr.-Ing. Max Leibbrand,† a Director of the German State Railway Company, was based on the principle that maximum support should be given to a wide range of industries and that the expenditure should be as useful and productive as possible from the railway standpoint. About £12,200,000 has been allocated to maintenance and renewals of permanent way and fixed structures; £7,250,000 to locomotives and rolling stock; £550,000 to machinery; £8,250,000 to extensions, new lines, &c.; and £2,500,000 to the financing of the State motor roads. The 1933-34 programme includes also the expenditure of £2,500,000 on electrification schemes, £1,100,000 on railcars and ancillaries, and £750,000 on road vehicles; these figures, relatively small in themselves, are significant in relation

to the company's policy of adapting its methods and services to modern requirements and opportunities. During the year 1933, about 1,616 miles of track and 6,400 sets of points were renewed. Some 4,163 miles of track are now equipped with 30-metre (98½-ft.) rails and great numbers of short rails have been welded together. By improving alignment, the number of speed restrictions is being decreased and safety enhanced. Other works in hand include the elimination of many level crossings, and the strengthening or renewal of bridges. Up to the present, more than fifty plate girder bridges have been built by electric welding. Within the next few years all distant signals will be moved from 700 to 1,000 metres (766 to 1,094 yards) on main lines to allow for increases in speed; and a great deal will be done in the way of rebuilding or replacing locking frames, and improving and adding to train control equipment.

Labour-Saving Devices

In competition with the road transport of goods, railway speeds must be increased, and the facilities for transferring goods to and from the railway must be improved. Cranes, elevators, conveyors, chutes, bunkers and other freight handling equipment as used at ports, can be applied more extensively to railway working now that collection and delivery by motor road vehicles make possible a reasonable concentration of road-rail and rail-road transference at large depots. A great deal still remains to be done in taking full advantage of container transport. The German State Railway is experimenting with a variety of containers ranging in capacity from a few hundredweights to several tons, and it is proposed gradually to standardise a series of containers applicable to varied goods, thus avoiding empty returns. Finality has not yet been reached in regard to road and rail trucks for the carriage of containers and, as regards the transference of containers from road to rail and vice-versa, it appears that a self-propelling truck with lifting platform offers the most convenient and economical solution. A well organised container service offers greater speed and punctuality than road transport; the company's skip-container service, in which one wagon carries two 13½-ton skips of coke or three 9-ton skips of coal or ore, is particularly suitable for loading ships; and the 16-wheeled rubber-tyred truck built by the company for carrying a loaded railway wagon through the streets, thus taking the place of a private siding, is a further contribution to the economical provision of door-to-door service.

The provision of rapid transport for passengers is not merely a matter of increasing train speeds. More frequent services, better conditions and more convenient times of arrival are no less important than reduction in journey time; while facilities for eating, sleeping and working on trains are often equivalent to an acceleration of running. The increased power required to overcome air resistance and provide for rapid acceleration is a serious consideration where extra high speeds (95 m.p.h. or higher) are concerned. The power required is then at least 10 h.p. per ton, which can be provided relatively easily by steam engine or electric motor, owing to the overload capacity of these machines. Where internal combustion engines are concerned, however, over powering is involved unless supplementary power for acceleration can be derived from an accumulator, flywheel or compressed air.

High-speed service with frequent stopping is at a serious economic disadvantage unless regenerative braking can be employed, preferably by a storage system which is then available to assist acceleration. The permissible superelevation of the track at curves is the factor limiting the increase of speed. According to Dr. Leibbrand, speeds from 160 to 200 km. (say 100 to 124 miles) an hour are the highest permissible on the best German main lines in the present state of technology, while speeds up to 90 km. (about 56 miles) an hour are allowable on secondary lines where conditions are not unfavourable. The economic justification for providing accelerated and more frequent passenger services on the German State Railway lies in the resultant increase in traffic and the enduring stimulus to trade and prosperity. Railcars and light high-speed trains will play a leading part in the multiplication and speeding-up of services, and a figure of £100,000,000 is mentioned in connection with the provision of new locomotives and rolling stock. Only a part of this would be chargeable to capital account, much of the new material representing normal replacement. On the other hand, granted that faster and more frequent services are required, there is every reason to provide them as soon as possible, even at the cost of replacing existing equipment before it is worn out.

CHANNEL TUNNEL COMPANY. — At the recent ordinary general meeting of this company, Baron Emile d'Erlanger (the Chairman) said that there was really nothing to report. He meant that they were marking time. They must simply wait for better times. They were paying their way in that they were incurring no loss. In fact their position had improved as the value of their investments had increased. Mr. Charles Sheath, a Director, said he still believed in the company, and it would be inadvisable at the present time to talk of liquidation.

* Throughout this article all sums are reckoned at parity of exchange, viz. 20 marks = £1.

† *Zeitschrift des Vereines deutscher Ingenieure*, vol. 78, p. 131.

The Institute of Transport Congress at Leeds

(See also editorial note on page 1009)

Leeds is undoubtedly the central point of Great Britain, even if the claim made by some of its inhabitants to be that of the Universe cannot be proved. By selecting Leeds as the site of its annual congress this year, the Institute of Transport has seized an opportunity and shown its sympathy. The programme of the congress is a measure of the opportunity. It includes, besides the discussion of three important papers, visits to various works of interest to students of transport, as well as social functions. The following are the chief features of the programme which began on Wednesday:—

Papers on "The Transport Requirements of Industry," by Mr. C. A. Lambert (General Manager, Bolsover Colliery Co. Ltd.); "The Public Control of Passenger Transport Outside London," by Dr. K. G. Fenelon, M.A., Ph.D. (Director of the Department of Industrial Administration, Manchester College of Technology); "The Price Issue in Public Utility and Monopolistic Industries," by Professor J. H. Jones, M.A., Ph.D. (Professor of Economics, University of Leeds). The first, abstracted below, was read on Wednesday, and the second, of which an abstract will be found in our Road Transport Section on page 1020, on Thursday. The last is to be read to-day and will be abstracted in our next issue, in which also the discussions will be summarised.

Visits to the colour light signalling installation and signal box at Thirsk, and the permanent way reclamation yard at Darlington, of the L.N.E.R., on this excursion the members travelled both ways between Leeds and Darlington behind the Armstrong-Whitworth 800 b.h.p. 1-Co-1 universal diesel locomotive, as referred to on page 983 of *The Railway Gazette* of June 1. The works at Kirkstall and the Donisthorpe garage at Hunslet of the Leeds City Transport Department; the diesel engine works of J. & H. McLaren Limited; the factories of Montague Burton Limited; the plant works at Doncaster of the L.N.E.R.; the works of Karrier Motors Limited, at Huddersfield; the Aire and Calder Navigation; and to places of beauty and historic interest in the neighbourhood.

On Wednesday, before the reading of Dr. Fenelon's paper, the Lord Mayor of Leeds (Mr. A. E. Wilkinson) extended a civic welcome to the congress. On the same day, at the Midland Hotel, Bradford, there was a reception by the Lord Mayor of Bradford (Captain A. W. Brown, J.P.), and the Chairman (Councillor W. Hodgson, J.P.) and the Members of the Bradford City Tramways Committee. Last night at the Leeds Town Hall, there was a reception by the Lord Mayor of Leeds (Mr. A. E. Wilkinson), after which the Chairman (Councillor J. Arnott, J.P.) and the Members of the Leeds City Transport Committee entertained the congress at a dance and cabaret. To-morrow the President of the Institute (Mr. William Whitelaw) is holding a reception at the Queen's Hotel, Leeds.

Among others attending the congress are the following:—

Messrs. C. R. Tattam, Chairman of Congress Local Committee (General Manager, Bradford City Tramways); J. P. Allix (District Passenger Manager, Leeds, L.N.E.R.); A. H. Amor (General Manager, Northern Motor Utilities Limited), A. W. Arthurton (Director, British Railways Press Bureau); Sir Ernest Bain; Messrs. W. J. Bees (Director of Education,

Leeds); E. Bevin (Secretary, Transport and General Workers Union); S. Bradbury (Secretary, Aire and Calder Navigation); W. P. Bradbury (Assistant to Chief Commercial Manager, L.M.S.R.); F. G. Bristow (Secretary, Commercial Motor Users Association); A. Brown (District Goods Manager, Leeds, L.N.E.R.); S. T. Burgoine (Passenger Manager, N.E. Area; L.N.E.R.); A. J. Butler (President, Canal Association); H. H. Crow (Managing Director, Crow Carrying Co. Ltd.); Ashton Davies (Chief Commercial Manager, L.M.S.R.); Sir John Eaglesome (Managing Director, Aire and Calder Navigation); Messrs. H. Faircloth (Cartage Working Assistant, L.M.S.R.); O. C. Gatenby (Mineral Manager, L.N.E.R.); W. H. Gaunt

(Distribution Manager, J. Lyons & Co. Ltd.); Sir Alexander Gibb; Messrs. C. Le M. Gosselin (Managing Director, H. Viney & Co. Ltd.); D. M. Gracie, Hon. Sec. of Congress Local Committee (District Supt., Leeds, L.N.E.R.); H. N. Gresley (Chief Mechanical Engineer, L.N.E.R.); T. Bernard Hare (District Superintendent, Darlington, L.N.E.R.); P. A. Harverson (Assistant Passenger Manager, N.E. Area, L.N.E.R.); T. Hornsby (Divisional General Manager, N.E. Area, L.N.E.R.); A. E. Kirkus (Director of Statistics, Ministry of Transport); W. Vane Morland (General Manager, Leeds City Transport); J. Pike; R. Stuart Pilcher (General Manager, Manchester Corporation, Transport); V. A. M. Robertson (Civil Engineer, L.P.T.B.); C. E. R. Sherrington (Secretary, Railway Research Service); C. J. Hyde Trutch (Diesel Traction Department, Sir W. G. Armstrong Whitworth & Co.); H. A. Watson; E. F. Wilkinson (District Passenger Manager, Newcastle, L.N.E.R.).

The Transport Requirements of Industry*

Reviewing the development of transport facilities, Mr. Lambert compared the comparatively unfettered course pursued by the roads in diverting to themselves traffic previously carried by train with the limitations imposed by Parliament upon the railways when they began to compete with the canals. But whereas the canals faced their rivals following a period of prosperity, the growth of road transport coincided with the depression of the post-war years, so that apart from losing traffic of the type Mr. Lambert described as "roadable," the railways suffered additionally from the fact that industry was producing fewer heavy, or "non-roadable," commodities. The institution of the conference on road and rail transport under the chairmanship of Sir Arthur Salter indicated that the many irreplaceable qualities of railway service were recognised, and it can be readily demonstrated that the financial stability of the British railway system is essential to the well-being of industry.

The transport requirements of industry fall under the headings of service and cost. The quality of service is always changing as a result of competition, and industry is ever ready to avail itself of higher standards as they become available. As to cost, cheap transport is an important factor in stimulating trade. In comparing the facilities offered by road and rail, it must be taken into account that, notwithstanding the Road and Rail Traffic Act of 1933, road transport is still a free agent as regards charges. Its favoured position is a striking contrast to the obstacles which have beset the railways in their attempts to secure economy of working. The Railways Act of 1921 could naturally make no provision for the approaching but unforeseen depression, and the standard revenue of £50 million, that of 1913, upon which it was based, soon fell outside the range of practical politics. The railways must, therefore, become

reconciled to altered conditions and seek a new adjustment of costs and revenue.

For the benefit of both parties, it is reasonable to ask for the will to use the railways among traders and for the will to render the best possible service upon the part of the railways. The Road and Rail Traffic Act of 1933 gave the railways a new lease of life in their ability to make agreed charges, subject to the approval of the Railway Rates Tribunal, and it is up to industry for its own sake to encourage the companies to benefit by their new liberty.

Elements of Railway Service

Mr. Lambert then examined the ways in which the railways can merit such encouragement. Returning to his definition of the elements of transport as "service" and "cost," he subdivided the first into the factors of despatch and security. There was a time when heavy train loads were strenuously advocated as a contribution to economical working. To-day, road competition has altered the outlook and demands greater despatch than ever, which can be secured only by lighter wagon and train loads. Mr. Lambert expressed the view that in this respect goods transport facilities have not advanced commensurately with those for passenger traffic.

In regard to security, the standard attained by door-to-door road transport is being achieved on the railways by the use of containers. Damage resulting from shunting is another problem demanding attention, and Mr. Lambert advocated the use of screw-coupled wagons in the formation of trains for the rapid transport of roadable goods. He suggested the possibility that future practice will consist of the transhipment of containers from long, flat screw-coupled wagons at junction stations to other similar vehicles for the various destinations instead of shunting loose-coupled trucks from one train to another as at present. "It may be hoped," he said, "that the limits of invention have not yet been reached in bringing about improved

* Summary of a paper presented by Mr. C. A. Lambert, General Manager, Bolsover Colliery Co. Ltd., at the Institute of Transport Congress at Leeds, on June 6.

means of handling goods on the railway. The iron road still possesses many advantages over the public highway for security and speed of movement, but new methods must replace those that were accepted as the best available until the internal-combustion engine came on the scene.

The Factor of Cost

Of cost, Mr. Lambert said that the one requirement was that it should be as low as possible. By affecting the price of the article, it influenced both home and foreign trade. Low prices are necessary for the industrial revival and the relief of unemployment. A significant passage in the report of the Conference on Rail and Road Transport admitted that there are certain classes of traffic for which the motor vehicle is more convenient and economical than the train, but Mr. Lambert warned those who imagined they were independent of the railways to remember that upon their prosperity depended that of the country as a whole, and low charges depend largely upon the volume of traffic handled.

With regard to the transport of non-roadable goods, Mr. Lambert was of the opinion that traders would not oppose a policy of slower transport and larger train loads if offset by concessions in charges. For roadable goods, however, rail time must equal road time, unless lower charges are fixed for the former.

The importance of coal traffic, with its attendant increase in receipts from the carriage of timber, steel and other non-roadable goods, was emphasised, and the author foresaw a hopeful future for the coal industry owing to developments in the use of electricity and gas and the check on imports of oil and petrol. He also urged the recovery in agriculture, and the textile industries should be furthered by a revision of transport charges in their favour. Concluding his paper, he said: "Now is the time when a liberal policy of cheaper transport by rail should bring its reward. We have waited long for the change from increasing depression to the dawn of hope. We have perhaps not yet reached the final stage of co-ordination between rail and road transport, but the railways now have more scope than ever before to develop their traffic by fostering the trade recovery of the country and so to restore their fortunes."

MODEL HOUSE AT KING'S CROSS.—The modern detached house with three bedrooms, two reception rooms, kitchen, bathroom and garage, which has been built in front of King's Cross station, L.N.E.R., is not for sale, but is a show house of John Laing & Sons Ltd., building contractors. It is designed to draw attention to the type of house which can be bought for £775 freehold on various estates in the outer suburbs. The house, which is completely furnished and equipped with a telephone, serves as an enquiry office for the Laing estates.

RAILWAY AND OTHER MEETINGS

THE ANTOFAGASTA (CHILI) & BOLIVIA RAILWAY CO. LTD.

The ordinary general meeting of the proprietors of the Antofagasta (Chili) & Bolivia Railway was held on Tuesday, June 5, at Winchester House, Old Broad Street, E.C.2, Mr. A. W. Bolden (Chairman and Managing Director) presiding.

The Secretary, Mr. C. Cowley, read the notice convening the meeting.

In moving the adoption of the report and accounts, the Chairman pointed out that although there had been a slight improvement in the situation since 1932, when the aggregate traffics represented what was normally carried in three and a half months, the gain was to a great extent offset by exchange troubles. Although there had been increases in practically all classes of traffic except the important item of tin, the receipts amounted to only 30 per cent. of the average for a pre-depression year and were still far from satisfactory.

The outstanding feature of the year was the reduction in working expenses. Everything reasonably possible to secure this had been done, with the result that a decrease of ten per cent. had been recorded, coinciding with an increase of ten per cent. in gross receipts. The policy of economy was still being vigorously pursued, but the Chairman could definitely state that it was allowed to be in no way prejudicial to the mechanical efficiency of locomotives and rolling stock. Passenger traffic was better both in Chile and Bolivia, the improvement in Bolivia being mainly due to the transport of troops.

A satisfactory feature was the increase in sulphur traffic, of which nearly 20,000 tons were carried. There was also a slight improvement in general merchandise. The fall in receipts from fuel oil was explained by the increased use of national coal in the nitrate officinas, but it could reasonably be hoped that this would eventually be compensated by the nitrate wagons being sent up to the works loaded with coal instead of empty, as was often the case at present.

Referring again to the problem of exchange and to the difficulty in remitting funds, the Chairman explained that it was impossible to adjust tariffs to coincide with all the currency fluctuations. The company was, so to speak, a sterling company, and was bound to incur considerable sterling expenditure in the purchase of materials. Friendly representations had been made in the proper quarters regarding the complications of the position.

The depression in the Chilean nitrate industry had affected the railway adversely, but the Chairman was confident that the reorganisation now being

undertaken by the government would improve its prospects and that the coming of a general world revival would see it restored to its old prosperity.

With regard to the completion of the Potosi-Sucre railway, a law had been passed to provide the necessary finance, but the Bolivian President had now intimated that he did not wish the arrangements to be carried through and his government was therefore in debt to the railway for the work already finished. Concluding, the Chairman said the receipts for the year to date showed an improvement of thirty-three per cent. on the corresponding period of last year.

The report and accounts were unanimously adopted.

Questions in Parliament

Street Traffic and Underground Railways

Mr. D. G. Somerville, on June 6, asked the Minister of Transport whether, in view of the increasing congestion of the streets in the West End during the summer season, he would suggest to the London Passenger Transport Board the desirability of bringing more effectively to the public notice the alternative underground means of moving about London.

Lt.-Col. Headlam (Parlty. Secy.) replied: I understand that the London Passenger Transport Board is arranging for a special series of posters to be displayed with a view to encouraging the public to use the railways in the congested centre of London during the summer season.

Forthecoming Events

June 9 (Sat.).—Stephenson Locomotive Society. Visit to Gas Light & Coke Co.'s Works, Beckton.

June 13 (Wed.).—Institution of Civil Engineers, Great George Street, London, S.W.1. Conversazione.

June 15 (Fri.).—Mansion House Association on Transport, at St. Ermin's Restaurant, Caxton Street, London, S.W.1, 1.15 p.m., Informal Luncheon. Annual General Meeting, 3 p.m.

June 15-16.—Institution of Railway Signal Engineers, at Cardiff. Summer Meeting.

June 15-18.—Railway Students' Association (London), at Belfast. Annual Convention.

June 18-30.—Alfred Herbert Limited, Coventry. Exhibition of Grinding Machinery.

June 20-23.—International Congress for Steel Development, at Inst. of Civil Engineers, Great George Street, London, S.W.1.

June 21 (Thurs.).—Institution of Electrical Engineers, at Natural History Museum, London, S.W.7. Annual Conversazione.

June 26-29.—Institution of Mechanical Engineers, at Liverpool. Summer Meeting.

July 1-8.—International Tramways and Transport Association, at Berlin. Biennial Congress.

July 7-12.—Permanent Way Institution, at London. Jubilee Convention.

July 11 (Wed.).—Institution of Electrical Engineers, Savoy Place, London, W.C.2, Conversazione and Reunion.

NOTES AND NEWS

Reconstruction of G.W.R. Viaducts.—The timber viaduct over the River Artro, near Llanbedr and Pen-sarn on the Cambrian line between Harlech and Barmouth, is to be reconstructed. Extensive repairs are also to be carried out to the masonry viaduct at Tenby. Both these viaducts have been in use over 60 years.

The Lagny Accident.—The enquiry into the Lagny disaster is at last drawing to a close and the report is expected shortly. It may be recalled that on the foggy and frosty night of December 23 a *rapide* from Paris to Strasbourg, travelling at high speed, collided with a preceding express for Nancy, which had been stopped by signal. The accident caused the death of more than 200 passengers and serious injuries to many more.

A "Metro" Liquidation.—At a meeting held at Baker Street station on May 31 a resolution was passed for the voluntary winding up of the N.W. Land & Transport Co. Ltd., Mr. J. S. Anderson being appointed liquidator. This company, which was an associate of the old Metropolitan Railway, took over the railway local buses in Watford, but subsequently passed them over to the Lewis Omnibus Co. Ltd. in return for 50 per cent. of that company's share capital. The Lewis business has now been absorbed by the London Passenger Transport Board.

Southern Railway Bill.—This Bill was reported, with amendments, to the House of Lords on June 5 by the Unopposed Bills Committee of that House. It has already been through the House of Commons. The Bill empowers the company to construct a new railway between Folkestone and Abbotscleif, near Dover; to acquire lands for substations for the electrification to Sevenoaks and to Eastbourne and Hastings; and to extend the powers of the West London Extension Railway Company (of which the Southern Railway Company is a part owner) in regard to the purchase, disposal, and development of lands.

"Invisible Ray" Installations on the Underground.—The lights illuminating the gap caused by the curvature of the line between the cars and the platforms on the Waterloo northbound line of the Bakerloo tube and on the Charing Cross northbound line of the Hampstead tube are now switched off automatically when a train has left the station and switched on again immediately before a train comes to rest at the prescribed stopping mark. The operation is carried out by the train interrupting a ray of light directed from a special projector lamp on to a photoelectric apparatus. The switching on of the lights immediately before the train comes to rest is intended to draw

the attention of passengers to the gap in order to prevent accidents. The apparatus employed has been supplied by the General Electric Co. Ltd.

New G.W.R. Halt at Wyre.—On Monday next, June 11, the new halt at Wyre, between Fladbury and Pershore, will be opened for traffic. The halt will be served by 16 trains daily, and additional late services will be provided from Evesham and Worcester on Wednesdays and Saturdays. There will be nine Sunday services from the halt.

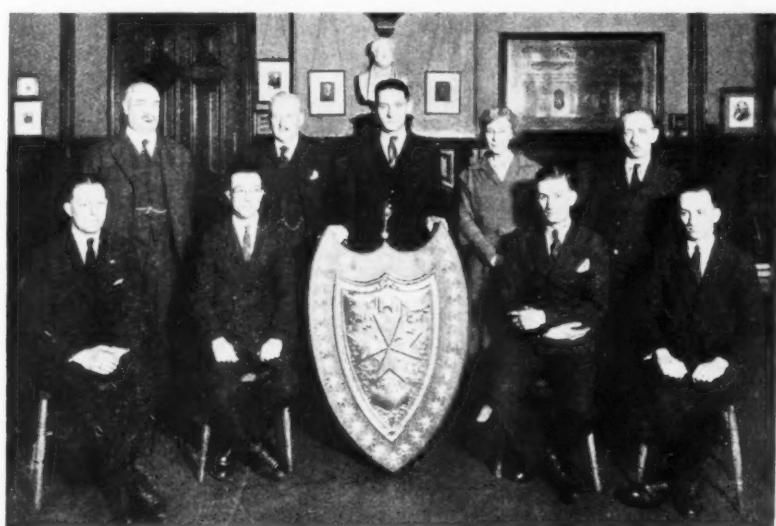
Polish Train for Foreign Tour.—Reuters Trade Service learns from Warsaw that a special Polish train will leave that city about the middle of this month on a fortnight's circular tour in Western European countries. The train will have ex-territorial rights so that the passengers will not need to have passports. The itinerary of the train will be Warsaw, Berlin, Brussels, Paris, Marseilles, Cannes, Milan, Venice, Vienna, Warsaw. The journeys between the towns will be made at night so that the tourists will have the days free to visit the various towns. Similar Polish tourist trains were run successfully last year, but exclusively on Polish territory.

Netherlands Railways Posters.—A couple of very fine posters, issued by the Netherlands Railways, are to hand from Holland. Perhaps the most striking of these is that showing a photographic enlargement of a diesel-electric train—one of 40 now in service in Holland; to which, it will be recalled, special reference was made in our *Diesel Railway Traction Supplement* published on May 18. The lower half of the poster consists of informative letterpress re-

lating to the intensive passenger service. The second poster gives a diagonal view of the same train, artistically coloured and silvered, standing out against a striking background of pale green with scarlet letterpress.

Brazilian Railway Concessions.—Reuter reports from Rio de Janeiro that the Brazilian Government has annulled the contract of the Eastern Railways Company of Brazil and has taken over the concern. The Government has also revoked the clauses in the contract of the San Paulo & Rio Grande Railway Company concerning the guarantee of interest which, since July 1, 1930, has been limited to 6 per cent. on £4,404,000 (sterling) instead of £9,516,000 (sterling). The conclusion of the concession of the Hansa-Porto Uniao Line to the San Paulo & Rio Grande Company has also been decreed.

Inter-Railway Ambulance Challenge Shield.—The second consecutive victory by the Great Western Railway in the Inter-railway ambulance challenge shield competition has had a heartening effect upon the movement within the G.W.R., and congratulations have been showered upon the South Lambeth team which secured the premier place in the contest on May 15 and thus retained the coveted trophy for the company for another year. The victory was celebrated at the Great Western Royal Hotel, Paddington, on the evening of May 29, when the winning team were entertained at dinner under the presidency of Mr. J. F. Lean, Principal Assistant to the General Manager and Chairman of the Central Ambulance Committee. Among others present were Dr. I. H. Maclean of St. Mary's Hospital, Mr. A. Maynard, Chief Goods Manager, Mr. C. T. Cox, Divisional Superintendent, Mr. A. S. Mills, District Goods Manager and Miss C. A. Ault, Ambulance Centre Secretary. The team received the congratula-



The winning G.W.R. team with the Inter-railway Ambulance Challenge Shield

lations of the chairman and the assembled company, and were encouraged to endeavour to retain their premiership in the field of first aid. Mr. Lean said that no small need of thanks was due to Dr. Maclean, who had judged the company's semi-final and final competitions and given constructive criticism to all G.W.R. competitors in those contests. The team captain, Mr. G. S. Stallard, replied. The team afterwards spent an enjoyable evening at the Gaiety Theatre.

L.M.S.R. Warehouse Schemes.—In order to meet increasing demands for storage accommodation, the L.M.S.R. has authorised schemes of warehouse extension at Lancaster and at Wigton (Cumberland). At Lancaster, 170 sq. yd. of additional accommodation will be provided, bringing the total space available to 555 sq. yd., while at Wigton an additional 200 sq. yd. will increase the total accommodation to 500 sq. yd.

Anglo-Argentine Tramways.—The Duke of Atholl, Chairman of the Anglo-Argentine Tramways Company, presiding on June 5 at meetings convened for the purpose of considering a moratorium scheme in respect of the interest and sinking fund services on debenture stocks, said there was a prospect that the proposal for a co-ordinated system of transport for Buenos Aires would pass through Congress in the current session. For lack of the necessary quorums the meetings were postponed until June 26.

Review of Standard and Exceptional Charges.—The Railway Rates Tribunal was engaged on Tuesday and Wednesday (June 5 and 6) on the annual review of the standard and exceptional charges of the four amalgamated railway companies. No change either in the upward or downward direction was proposed by the railway companies. Mr. W. V. Wood, Vice-President, L.M.S.R., gave evidence on behalf of the four companies, pointing out that the deficiencies on standard revenues had continued in 1934 and were likely still to continue, and claiming that they were not due to lack of efficiency or economy in operation.

Proposal to Close 3,250 Miles of Canadian Railways.—In a statement made on June 6 before the Dominion House of Commons Committee on Railways by Judge Fullerton, Head of the Board of Trustees of the Canadian National Railways, it was said that, in the interests of economy, the Canadian National and Canadian Pacific Railways are together considering 36 proposals involving the discontinuance of a total of 2,100 miles of railway line which have been unremunerative. Judge Fullerton also stated that, in addition, the Canadian National Railways Committee was considering discontinuing the operation of 1,150 miles of line where traffic had been too light to give an adequate revenue return. The total route mileage of the Canadian

National Railways is approximately 23,780 miles, and of the Canadian Pacific Railway, 22,500 miles.

Kirkwall-Thurso Air Service Resumed.—Highland Airways Limited resumed its Kirkwall-Thurso service of one plane a day in each direction on June 1.

Spanish Railway Rates Increased.—According to a Reuters report from Madrid, the Cortes, or Spanish Parliament, has decided to increase all railway rates by 15 per cent. as from June 1.

To Belgium via Zeebrugge.—The L.N.E.R. Harwich-Zeebrugge service will begin from Harwich on June 29 and from Zeebrugge on June 30. The steamers will run every night including Sundays, the boat train leaving Liverpool Street station at 8.30 p.m. Cheap tickets will be issued every day available for any period from six days to one month.

Royal Patronage of Cathedral Pilgrimages.—Their Majesties the King and Queen have shown their approval of the Cathedral Pilgrimage scheme, announced in THE RAILWAY GAZETTE for May 25, by purchasing a number of pilgrim tickets. Some 45 deans and chapters have now agreed to welcome pilgrims to their cathedrals during the fortnight July 1-14.

London Transport Bill.—The Committee stage of the London Passenger Transport Board Bill in the House of Commons was concluded on June 6, and the Bill was ordered to be reported to the House. A clause, to which objection was taken by the L.C.C., was sanctioned. It gives the Board in relation to its whole undertaking the same exemption, subject to certain conditions, from the London Building Act, as the railway part of its undertaking at present enjoys.

Agreed Charges.—Thirteen more applications for the approval of agreed charges under the provisions of Section 37 of the Road and Rail Traffic Act, 1933, have been lodged with the Railway Rates Tribunal, as will be seen from the legal notice published on p. 1043. These applications may be inspected at the office of the Tribunal, 2 Clement's Inn, W.C.2, at the Railway Clearing House, and at 11 named centres outside London. Notices of objection must be filed at the office of the Registrar (2, Clement's Inn) on or before June 26.

Important Internal Trunk Air Services.—As forecast in THE RAILWAY GAZETTE for May 18 last, Southern & Central Air Lines Limited is to open two important new internal air services between Hull and Southampton via Nottingham, and Hull and Birmingham, as from June 18 next. In each case there will be two services daily, and the journey times will be 1 hour 40 minutes between Hull and Southampton, and $\frac{1}{2}$ hour between Hull and Birmingham. A number of important connections will be made, the principal of which will be with London Scottish & Provincial

Airways Limited, whose London-Nottingham-Edinburgh service is due to begin on or about June 18.

L.N.E.R. 2-8-2 Locomotive.—The *Cock o' the North*, illustrated and described in last week's issue, made a trial run from Edinburgh to Aberdeen on Monday and was on exhibition at Aberdeen on Tuesday morning. In the afternoon the engine returned to Edinburgh, and was on exhibition there on Wednesday.

Unusual Underground Workings.—Experimental trips were run on June 1 between Hammersmith (Metropolitan Line) and Barking (District Line), via King's Cross and Aldgate. We understand from the London Passenger Transport Board that the object was to test Metropolitan Line electric rolling stock over the tracks east of Whitechapel with a view to the possible inauguration of a service with such stock to and from Barking via the north side of the Inner Circle.

Engineer and Railway Staff Corps Dinner.—The Engineer and Railway Staff Corps annual dinner was held on June 4 at the Hotel Metropole, Colonel Commanding Sir Herbert Walker in the chair. As well as a number of high regular officers, there were among those present:

Colonels Sir Ralph Wedgwood, Sir Josiah Stamp, Sir James Milne, Sir Henry Fowler and A. Newlands; Lieutenant-Colonels A. J. Barry, C. J. Brown, C. R. Byrom, R. Carmichael, E. C. Cox, G. Ellson, Sir William Forbes, Sir Robert McAlpine, R. E. L. Maunsell, A. H. L. Mount, Sir David Owen, G. S. Szlumper, A. W. Szlumper, W. K. Wallace; Majors R. A. Bacon (Hon. Sec.), H. P. M. Beames, F. Bushrod, S. H. Fisher, E. H. d'E. Darby, A. W. Donaldson, E. L. Hawkins, R. G. M. Inglis, E. J. Missenden, C. J. Selway, G. N. Shawcross, H. B. Smith, D. C. Urie, F. E. Wentworth-Shields.

The Week's Road Accidents.—The Secretary to the Ministry of Transport has issued the following return for the week ended May 26, of persons killed or injured in road accidents:

	Killed in accidents reported during the week		Reported during the week as having died as the result of accidents occurring in previous weeks		Injured in accidents reported during the week	
	No.	No.	reported during the week	having died as the result of accidents occurring in previous weeks	No.	No.
England	96	30	4,751			
Wales	7	—	244			
Scotland	12	2	382			
Great Britain	115	32	5,377			

The total fatalities of the week as the result of road accidents were therefore 147, as compared with 127 for the preceding week. The week ended May 26 included, of course, the Sunday and Monday of the Whitsun week-end.

N.U.R. Funds and Membership.—The accounts of the National Union of Railwaysmen for last year show that assets totalled £1,559,865, an increase of £76,852. The year's income was £54,891, an increase of £8,474, and the

total expenditure was £468,039. The general fund last year had to bear £53,000 for strike pay in the Irish dispute. Membership at the end of the year was 275,706, a decrease of 14,219, which the union attributes mainly to a reduction in the number of employed railwaymen. The practice in recent years of retiring men at 60, instead of 70 as had formerly been usual, has meant an increased drain on the disablement fund.

The Railway Queen's Peace Chain.—A new link was added to the Railway Queen's silver chain of peace last weekend, when Miss Gracie Jones, the present Queen, visited Edinburgh. Mr. James Calder, General Manager, Scotland, L.N.E.R., presided at the meeting in the Usher Hall at which the new silver link in the chain of international peace, started in Liverpool in 1925, was formally secured. Mr. Calder said: "We are glad to be associated with the great adventure which lies before the Railway Queen. The railwaymen have

maintained a railway queen as an ideal, free from any selfish consideration. It is a noble ideal, and one which finds a common platform for all grades of railwaymen, and is an expression of understanding and mutual regard that helps to keep the wheels turning."

Passenger Transport on the Thames.—The Minister of Transport has requested the London and Home Counties Traffic Advisory Committee to hold a public inquiry into the desirability and practicability of the provision of a regular passenger transport service on the River Thames, and to report to him thereon. The Committee has accordingly appointed the following five members to hold the inquiry and to report to it upon the facts:—Sir Henry Jackson, M.P. (Chairman), Mr. H. E. Clay, Mr. F. Bertram Galer, Mr. C. Latham, and Sir John R. Pakeman. The inquiry will be held in the Traffic Commissioner's Court at Caxton House (West Block), Tothill Street, S.W.1, beginning at 11 a.m. on June 28.

British and Irish Railway Traffic Returns

GREAT BRITAIN	Totals for 22nd Week			Totals to Date		
	1934	1933	Inc. or Dec.	1934	1933	Inc. or Dec.
L.M.S.R. (6,940 $\frac{1}{4}$ mls.)						
Passenger-train traffic...	486,000	598,000	— 132,000	9,040,000	8,882,000	+ 158,000
Merchandise, &c.	457,000	411,000	+ 46,000	9,729,000	8,920,000	+ 809,000
Coal and coke	192,000	187,000	+ 5,000	5,362,000	5,109,000	+ 253,000
Goods-train traffic	649,000	598,000	+ 51,000	15,091,000	14,029,000	+ 1,062,000
Total receipts ...	1,115,000	1,196,000	— 81,000	24,131,000	22,911,000	+ 1,220,000
L.N.E.R. (6,339 mls.)						
Passenger-train traffic...	288,000	344,000	— 56,000	5,808,000	5,718,000	+ 90,000
Merchandise, &c.	299,000	291,000	+ 8,000	6,866,000	6,136,000	+ 730,000
Coal and coke	214,000	175,000	+ 39,000	5,201,000	4,675,000	+ 526,000
Goods-train traffic	513,000	466,000	+ 47,000	12,067,000	10,811,000	+ 1,256,000
Total receipts ...	801,000	810,000	— 9,000	17,875,000	16,529,000	+ 1,346,000
G.W.R. (3,750 mls.)						
Passenger-train traffic...	201,000	245,000	— 44,000	3,779,000	3,784,000	— 5,000
Merchandise, &c.	190,000	173,000	+ 17,000	3,888,000	3,580,000	+ 308,000
Coal and coke	95,000	93,000	+ 2,000	2,271,000	2,237,000	+ 34,000
Goods-train traffic	285,000	266,000	+ 19,000	6,159,000	5,817,000	+ 342,000
Total receipts ...	486,000	511,000	— 25,000	9,938,000	9,601,000	+ 337,000
S.R. (2,176 mls.)						
Passenger-train traffic...	290,000	362,000	— 72,000	5,626,000	5,545,000	+ 81,000
Merchandise, &c.	71,000	66,000	+ 5,000	1,353,000	1,298,500	+ 54,500
Coal and coke	27,000	24,000	+ 3,000	727,000	670,500	+ 56,500
Goods-train traffic	98,900	90,000	+ 8,900	2,080,000	1,969,000	+ 111,000
Total receipts ...	388,000	452,000	— 64,000	7,706,000	7,514,000	+ 192,000
Liverpool Overhead ... (6 $\frac{1}{2}$ mls.)	1,103	1,147	— 44	23,978	23,341	+ 637
Mersey (4 $\frac{1}{2}$ mls.) ...	3,877	3,972	— 95	91,386	87,099	+ 4,287
*London Passenger Transport Board ...	545,400	—	—	24,322,000	—	—
IRELAND						
Belfast & C.D. pass. (80 mls.)	2,130	2,298	— 168	41,203	42,311	— 1,108
" " goods	578	524	+ 54	11,847	11,704	+ 143
" " total	2,708	2,822	— 114	53,050	54,015	— 965
Great Northern pass. (562 mls.)	8,350	7,750	+ 600	168,000	97,250	+ 70,750
" " goods	9,700	8,800	+ 900	182,550	108,250	+ 74,300
" " total	18,050	16,550	+ 1,500	350,550	205,500	+ 145,050
Great Southern pass. (2,158 mls.)	24,335	22,808	+ 1,527	437,955	420,496	+ 17,459
" " goods	34,012	29,511	+ 4,501	713,075	679,568	+ 33,507
" " total	58,347	52,319	+ 6,028	1,151,030	1,100,064	+ 50,966

Whitsuntide bookings, 1933

* 48th Week

British and Irish Railway Stocks and Shares

Stocks	Highest 1933	Lowest 1933	Prices	
			June 6, 1934	Rise/Fall
G.W.R.				
Cons. Ord.	551 $\frac{1}{2}$	31	51	— 11 $\frac{1}{2}$
5% Con. Prefce.	1095 $\frac{1}{2}$	691 $\frac{1}{2}$	1121 $\frac{1}{2}$	—
5% Red.Pref.(1950)	1091 $\frac{1}{2}$	871 $\frac{1}{2}$	1081 $\frac{1}{2}$	— 1
4% Deb.	1081 $\frac{1}{2}$	994 $\frac{1}{2}$	108	— 1 $\frac{1}{2}$
4 $\frac{1}{2}$ Deb.	108	100 $\frac{1}{2}$	1101 $\frac{1}{2}$	—
4 $\frac{1}{2}$ Deb.	116	106	117 $\frac{1}{2}$	—
5% Deb.	128	117 $\frac{1}{2}$	128 $\frac{1}{2}$	—
2 $\frac{1}{2}$ Deb.	65	60	70 $\frac{1}{2}$	—
5% Rt. Charge	124	111 $\frac{1}{2}$	127 $\frac{1}{2}$	—
5% Cons. Guar.	122	103	124 $\frac{1}{2}$	—
L.M.S.R.				
Ord.	297 $\frac{1}{2}$	121 $\frac{1}{2}$	221 $\frac{1}{2}$	— 1 $\frac{1}{2}$
4 $\frac{1}{2}$ Prefce. (1923)	51	17	48	— 11 $\frac{1}{2}$
4% Prefce.	72	33 $\frac{1}{2}$	77	— 1
5% Red. Prf. (1955)	93	47 $\frac{1}{2}$	99	—
4% Deb.	1031 $\frac{1}{2}$	891 $\frac{1}{2}$	104	—
5% Red. Deb. (1952)	114	105	111 $\frac{1}{2}$	—
4% Guar.	971 $\frac{1}{2}$	683 $\frac{1}{2}$	991 $\frac{1}{2}$	—
L.N.E.R.				
5% Pref. Ord.	221 $\frac{1}{2}$	78 $\frac{1}{2}$	171 $\frac{1}{2}$	— 5 $\frac{1}{2}$
Def. Ord.	103 $\frac{1}{2}$	41 $\frac{1}{2}$	8	— 5 $\frac{1}{2}$
4% First Prefce.	651 $\frac{1}{2}$	195 $\frac{1}{2}$	66	— 1 $\frac{1}{2}$
4% Second Pref.	40 $\frac{1}{2}$	121 $\frac{1}{2}$	321 $\frac{1}{2}$	— 1
5% Red.Pref.(1955)	83 $\frac{1}{2}$	27	87	—
4% First Guar.	94 $\frac{1}{2}$	581 $\frac{1}{2}$	96	—
4% Second Guar.	891 $\frac{1}{2}$	48	90	— 1
3 $\frac{1}{2}$ Deb.	77	60 $\frac{1}{2}$	78	—
4% Deb.	102 $\frac{1}{2}$	80	102 $\frac{1}{2}$	—
5% Red. Deb. (1947)	112	102 $\frac{1}{2}$	108 $\frac{1}{2}$	—
4 $\frac{1}{2}$ Sinking Fund Red. Deb.	1071 $\frac{1}{2}$	98 $\frac{1}{2}$	1061 $\frac{1}{2}$	—
SOUTHERN				
Pref. Ord....	71	27 $\frac{1}{2}$	75	— 1
Def. Ord....	24 $\frac{1}{2}$	95 $\frac{1}{2}$	24	— 1 $\frac{1}{2}$
5% Prefce.	1071 $\frac{1}{2}$	74	111	—
5% Red.Pref.(1964)	107 $\frac{1}{2}$	78 $\frac{1}{2}$	111 $\frac{1}{2}$	—
5% Guar. Prefce.	1241 $\frac{1}{2}$	102 $\frac{1}{2}$	124 $\frac{1}{2}$	—
5% Red.Guar.Pref. (1957)	115 $\frac{1}{2}$	103 $\frac{1}{2}$	115 $\frac{1}{2}$	—
4% Deb.	107 $\frac{1}{2}$	96 $\frac{1}{2}$	107	—
5% Deb.	126 $\frac{1}{2}$	114 $\frac{1}{2}$	126 $\frac{1}{2}$	—
4% Red. Deb. 1962-67	107 $\frac{1}{2}$	100	107 $\frac{1}{2}$	—
BELFAST & C.D.				
Ord.	6	4	6	—
FORTH BRIDGE				
4% Deb.	991 $\frac{1}{2}$	95 $\frac{1}{2}$	101 $\frac{1}{2}$	—
4% Guar.	981 $\frac{1}{2}$	94	101 $\frac{1}{2}$	—
G. NORTHERN (IRELAND)				
Ord.	71 $\frac{1}{2}$	31 $\frac{1}{2}$	5	—
G. SOUTHERN (IRELAND)				
Ord.	28	16	20	—
Prefce.	24	121 $\frac{1}{2}$	15	— 1 $\frac{1}{2}$
Guar.	42	163 $\frac{1}{2}$	40	—
Deb.	60	307 $\frac{1}{2}$	631 $\frac{1}{2}$	+ 1 $\frac{1}{2}$
L.P.T.B.				
4 $\frac{1}{2}$ "A"	117 $\frac{1}{2}$	112	118*	— 11 $\frac{1}{2}$
5 $\frac{1}{2}$ "A"	127 $\frac{1}{2}$	119 $\frac{1}{2}$	127*	— 11 $\frac{1}{2}$
4 $\frac{1}{2}$ "T.F.A."	111 $\frac{1}{2}$	106	108*	— 11 $\frac{1}{2}$
5 $\frac{1}{2}$ "B"	122 $\frac{1}{2}$	114	122*	— 11 $\frac{1}{2}$
"C"	86 $\frac{1}{2}$	74 $\frac{1}{2}$	73 $\frac{1}{2}$	— 3
MERSEY				
Ord.	161 $\frac{1}{2}$	5	14	—
4% Perp. Deb.	83	63 $\frac{1}{2}$	87 $\frac{1}{2}$	—
3% Perp. Deb.	62	51	65 $\frac{1}{2}$	—
3% Perp. Prefce....	50 $\frac{1}{2}$	27	53 $\frac{1}{2}$	—

* ex-dividend

June 8, 1934

CONTRACTS AND TENDERS

Southern Railway Main Line Electric Stock

The Southern Railway has placed orders for a total of 34 electric motor coaches divided equally between the Metropolitan-Cammell Carriage, Wagon & Finance Co. Ltd. and the Birmingham Railway Carriage & Wagon Co. Ltd. These coaches are required for the new Eastbourne services.

The Tilley Lamp Company has received an order from the Antofagasta (Chili) & Bolivia Railway for 12 Tilley floodlight projectors.

The Barrow Haematite Steel Co. Ltd. has received an order from the Buenos Ayres Western Railway for 1,900 pairs of steel fishplates for 100-lb. rails.

The India Rubber, Gutta Percha & Telegraph Works Co. Ltd. has received orders for Silvertown train lighting belting at a total price of Rs. 29,411, free delivery.

Jessop & Co. Ltd. has received an order from the Great Indian Peninsula Railway for five 15-ton kerosene oil tank wagons without wheels and axles, at a total price of Rs. 38,490.

George Spencer Moulton & Co. (India) Ltd. has secured an order from the Indian Stores Department for 800 sets of india-rubber buffer springs with M.S. painted plates at a total price of Rs. 10,983, free delivery.

The North Western Railway of India has placed orders for screw couplings in quantities of 1,200 and 800 respectively with J. O'Hara Murray & Co. and Vickers (India) Limited, for Alfred Herbert (India) Limited.

Further Diesel Railcars for Denmark

A/S. Frichs has recently delivered ten 450-500 h.p. diesel-electric railcars to the Danish State Railways and a further ten cars have been ordered from the same firm. These will be fitted with a new design of bogie by which the tractive power is raised and acceleration improved, but the maximum speed is reduced, to meet service conditions between Copenhagen and Hillerod, on which line the section from Copenhagen to Holte is in course of electrification.

J. Stone & Co. (India) Ltd. has secured an order from the Indian Stores Department for 3,750 110 kV. patent spring ring disc insulators, Steatite and Porcelain Products type S. 321, at a price of Rs. 16,465, free delivery.

William Jacks & Company has received an order from the Great Indian Peninsula Railway for one 3 ft. 6 in. elevating arm-type high-speed radial drilling, boring, tapping and studding machine, to be supplied by Fredk. Town & Sons at a price of Rs. 2,785, f.o.r. Bombay.

Alfred Herbert (India) Limited has secured an order from the Great Indian Peninsula Railway for four 24/26 in. Ormerod heavy duty crank-driven shaping machines with cone pulley drive and self-acting vertical feed, at a price of Rs. 3,485, each machine delivered f.o.r. Bombay.

Important L.M.S.R. Road Transport Orders

Orders for a total of 515 motor and 557 trailer road vehicles have been placed by the L.M.S.R., including:—

Albion Motors Limited: Seven 6-ton model M55 chassis with Gardner 51.W engines and driving cabs; four 6-ton model M55 chassis with petrol engines and driving cabs; eight 5-ton model L525 chassis with Gardner 41.W engines; three 6-ton model M55 chassis with Gardner 51.W engines, driving cabs, and Transport steel moving floor bodies; eight 4-ton model K1.53 chassis with Gardner 41.W engines, cabs and bodies; one 4-ton model K52 chassis with petrol engine and hand-operated end tipping body.

Morris Commercial Cars Limited: Thirty-two Morris C13 type chassis with cabs.

Ford Motor Co. Ltd.: Forty-two Fordson B.B. 2-ton chassis 131½-in. wheelbase; nine Fordson B.B. 2-ton chassis 157 in. wheelbase; seven Ford 1-ton chassis 131½-in. wheelbase; twelve Ford 14.9-h.p. Tudor saloons; one Ford 1½-ton truck complete.

Jowett Cars Limited: Eleven 10-cwt. light vans.

Dennis Bros.: Twenty-nine 2-ton parcels vans complete.

Karrier Motors Limited: Fifty Cob Major M.H. tractors and fifty trailers; six Karrier Bantam parcels vans complete; one Karrier C.Y.3 hand-operated tipper complete.

Scammell Lorries Limited: 128 Scammell 6-ton Mechanical Horse tractors; 242 Scammell 6-ton trailers; three Scammell 10-ton trailers; 116 Scammell 3-ton Mechanical Horse tractors; 145 Scammell 3-ton trailers.

Cranes (Dereham) Limited: Twenty trailers for Mechanical Horse tractors.

Eagle Engineering Co. Ltd.: Twelve 4-ton 4-wheeled trailers; four 5-ton 4-wheeled trailers.

Harrow Industrial Co. Ltd.: One 4-ton 4-wheeled Harrow trailer.

Scottish Motor Traction Co. Ltd.: Five Fordson Flexion livestock lorries.

Miles Limited: Three Fordson Sussex chassis with Miles livestock bodies.

Commer Cars Limited: Six Commer Pug 2-ton parcels vans.

Leyland Motors Limited: Two motor horse boxes (two-stall) on K.P.3 chassis.

Austin Motor Co. Ltd.: Ten Austin 10-h.p. de Luxe saloons; one Austin 12/4 touring car; five Austin 20 Ranelagh landauettes; one Austin 7 light van; one Austin 10 light van.

International Harvester Company: Two McCormick Deering shunting tractors.

Lansing Bagnall & Co.: Two Imp tractors.

Douglas Motors Limited: One Douglas works truck.

(See also page 1023 of our Road Transport Section.)

The Vulcan Foundry Co. Ltd. has received orders from the Eastern Bengal Railway for 12 boilers for K class 2-6-4 tank locomotives, broad gauge, 18 boilers for R class 4-6-0 mixed locomotives, metre gauge, and 15 sets of cylinders for P and R class engines, to be supplied by the consulting engineers, Messrs. Rendel, Palmer & Tritton.

The Port and Railways of Lourenço Marques is calling for tenders, to be presented in Lourenço Marques by August 6, for the supply of 20 complete automatic couplers for locomotives. Firms desirous of offering couplers

of United Kingdom manufacture can obtain further details from the Department of Overseas Trade.

The British Steel Export Association has received an order for 8,800 tons of steel plates, bars and sections for bridges for the Ministry of Railways, Nanking, China, to the inspection of the consulting engineers, Messrs. Fox and Mayo.

W. G. Bagnall & Co. Ltd. has received an order from the Eastern Bengal Railway for 17 boilers for P class 4-6-0 locomotives, metre-gauge, and an order from the Jodhpur Railway for two boilers for 4-6-0 locomotives, metre gauge.

Speed Indicators for the L.N.E.R.

The Hasler Telegraph Works has received an order from the London & North Eastern Railway for two Teloc speed indicating and recording instruments and transmission gear for application to the new three-cylinder 2-8-2 express passenger locomotives.

Peter Brotherhood Limited has been obliged by the large number of orders received during recent months to keep the works at Peterborough running continuously day and night. Among orders received are British Junkers diesel engines for Murex Welding Processes Limited; steam engine-driven circulating pumps for Beardmore & Co. Ltd.; two steam engine-driven two-crank air compressors for R. & W. Hawthorn Leslie & Co. Ltd.; one large air compressor and water cooling towers for the London Passenger Transport Board; and a four-stage air compressor for the Liquid Oxygen Co. Ltd.

ADDITIONAL G.W.R. EXPRESS SERVICES TO WEYMOUTH.—Beginning on June 1, additional afternoon services to Weymouth are being provided on Fridays and Saturdays off the 3.30 p.m. train from Paddington and the 4.35 p.m. train from Bristol. The arrival time at Weymouth, in both cases, is 6.43 p.m. The service will continue at week-ends until July 7.

IMPROVED THIRD-CLASS FRENCH-ENGLISH SERVICES.—The Northern Railway of France made some valuable concessions to third-class cross-Channel passengers when the summer timetables were introduced on May 15 last. The 8.57 a.m. express from Paris to Boulogne now runs through to Boulogne-Maritime giving direct access to the steamer sailing at 12.18 p.m., instead of terminating at Boulogne-Ville as hitherto. Through third-class coaches to Boulogne-Maritime, arriving at 6.41 p.m., are also incorporated in the 3.10 p.m. ex-Paris. In the reverse direction, through carriages for third-class passengers leave Boulogne-Maritime at 1.10 p.m. and are attached to the express arriving in Paris at 5.20 p.m. For the benefit of Dover-Calais third-class passengers, the former 6.29 p.m. from Calais-Ville to Paris now starts from Calais-Maritime, connecting with the steamer.

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LEGAL AND OFFICIAL NOTICES

IN THE COURT of the Railway Rates Tribunal.

Road and Rail Traffic Act, 1933.
Agreed Charges

NOTICE IS HEREBY GIVEN that Applications for the approval of Agreed Charges under the provisions of Section 37 of the Road and Rail Traffic Act, 1933, short particulars of which are set out in the Schedule hereto, have been lodged with the Railway Rates Tribunal.

The said Applications may be inspected at the Office of the Tribunal, 2, Clement's Inn, Strand, London, W.C.2, at any time during office hours and at the following places:

LONDON.—Railway Clearing House, 123, Seymour Street, N.W.1.
BIRMINGHAM.—District Goods Manager's Office, Snow Hill, Great Western Railway.
CARDIFF.—Divisional Superintendent's Office, Great Western Railway.
EXETER.—Western Divisional Superintendent's Office, Southern Railway.
LEEDS.—District Goods Manager's Office, Wellington Street, London & North Eastern Railway.
LEICESTER.—District Goods and Passenger Manager's Office, London Midland & Scottish Railway.
MANCHESTER.—District Goods Manager's Office, Hunt's Bank, London Midland & Scottish Railway.
SOUTHAMPTON.—Southern Divisional Superintendent's Office, Southampton West, Southern Railway.
YORK.—Goods Manager's Office, London & North Eastern Railway.
ABERDEEN.—District Goods and Passenger Manager's Office, London Midland & Scottish Railway.

EDINBURGH.—District Goods and Passenger Manager's Office, Waverley Station, London & North Eastern Railway.

GLASGOW.—Commercial Manager's Office, Central Station, London Midland & Scottish Railway.

A copy of each Application lodged with the Tribunal may be obtained from Mr. G. Cole Deacon, Secretary, Rates and Charges Committee, 35, Parliament Street, Westminster, London, S.W.1, price 1s., post free.

Notices of objection by any parties entitled to object to the approval of any of the said Agreed Charges must state concisely the grounds of objection and must be filed at the office of the Registrar, 2, Clement's Inn, Strand, London, W.C.2, on or before the 26th day of June, 1934, and a copy thereof on or before the same day served on or sent by registered post to Mr. Cole Deacon, at the above address. A separate Notice must be filed and served in respect of each Application.

Each Notice filed must be on foolscap size paper and must be stamped with an adhesive fee stamp for 2s. 6d. (which can be purchased at the office of the Tribunal only). If sent by post for filing each Notice must be accompanied by a Postal Order for 2s. 6d. payable to the Registrar, when a stamp will be affixed at the office. A Notice by a Representative Body of Traders must contain a statement of the facts upon which such Body claims to represent a substantial number of traders interested in or likely to be affected by the decision on, the application.

Four additional copies of each Notice must be lodged with the original at the office of the Registrar.

T. J. D. ATKINSON,
Registrar.

4th June, 1934.

South Indian Railway Company Limited

THE Directors are prepared to receive Tenders for the supply of:—
STEELWORK FOR BRIDGES.

Specifications and Forms of Tender will be available at the Company's Offices, 91, Petty France, Westminster, S.W.1.

Tenders, addressed to the Chairman and Directors of the South Indian Railway Co. Ltd., marked "Tender for Steelwork for Bridges," with the name of the firm tendering, must be left with the undersigned not later than 12 noon on Monday, the 25th June, 1934.

The Directors do not bind themselves to accept the lowest or any Tender.

A charge, which will not be returned, will be made of 10s. for each copy of the Specification.

Copies of the drawings may be obtained at the Offices of the Company's Consulting Engineers, Messrs. Robert White & Partners, 3, Victoria Street, Westminster, S.W.1.

A. MUIRHEAD,
Managing Director.

91, Petty France,
Westminster, S.W.1.
1st June, 1934.

H.E.H. The Nizam's State Railway

REQUIED, for service on the above Rail-way, one Carriage Repair Shop Foreman for Carriage Shops at Secunderabad.

Qualifications.—

Age 30-35 years; must have served apprenticeship as a body builder in a railway workshop or with a recognised coach building firm; subsequent experience should cover repair of coach bodies and preferably experience with wood-working machinery; also must have first-class knowledge of the assembling and erection of new wooden coach bodies.

Conditions of Service.—

Will be required to take full charge of coach building and repairing, and a small attached saw mill, with total staff of about 600 men.

Salary.—

Within the grade of "O.S. Rupees 460 to 585 per mensem, with annual increments of O.S. Rs. 25 per mensem. Commencing salary according to qualifications.

Applications (by letter only) giving full details of applicants' age, training and experience, and accompanied by copies of testimonials, should be addressed to the undersigned not later than 15th June, 1934.

F. ADAMS,

Secretary,
H.E.H. the Nizam's State Railway
Board.

Winchester House,
Old Broad Street,
London, E.C.2.
4th June, 1934.

* The Hyderabad State currency usually varies from Osmania Siaca (O.S.) rupees 114 to 117 per hundred British India rupees.

THE TRADE COMMISSIONER FOR MYSORE is prepared to receive Tenders for:—

TWO TANK LOCOMOTIVES,
METRE GAUGE.

Specifications and Tender Forms in triplicate can be obtained from the Consulting Engineers, Messrs. Rendel, Palmer & Tritton, 55, Broadway, Westminster, S.W.1, on payment of one half guinea, which will not be returnable.

Tenders, in duplicate, are to be submitted to the Consulting Engineers at the above address not later than 10 a.m. on 6th August, 1934.

Central Argentine Railway

NOTICE IS HEREBY GIVEN that the Transfer Books of the Company of the 4 per cent. Debenture and 3½ per cent. Central Debenture will be closed from the 8th to the 20th of June, both days inclusive, for the preparation of interest warrants.

F. FIGHERA,

Secretary,
Central Argentine Railway.

PATENTS for Inventions, Trade Marks, Advice, Handbook, and consultations free. King's Patent Agency, Ltd. (B. T. King, C.I.M.E., Registered Patent Agent, G.B., U.S., and Canada), 146, Queen Victoria Street, London, E.C.4. 49 years' references. Phone City 6161.

Overseas Railways

How can you cut operating costs?

A WELL-EXPERIENCED Mechanical Engineer with over twenty years on the German State Railways offers his services as a Consulting Engineer or for a permanent position as Locomotive Superintendent. All particulars and references may be obtained from Box 4, c/o RAILWAY GAZETTE, 35, Tothill Street, S.W.1.

IMPROVEMENTS in or relating to Means for Controlling Electric Lighting Installations in Railway Carriages or the Like."

The Proprietors of British Patent No. 260,360 desire to arrange for the commercial working of this Patent by sale outright or by licences granted on participating and reasonable terms.

Particulars obtainable from TECHNICAL RECORDS LIMITED, 59-60, Lincoln's Inn Fields, London, W.C.2.

Railway Share Market

The stock and share markets have been subject this week to some liquidation, although there is no confirmation of the rumours that financial trouble had developed in some part of the market. The selling which occurred early in the week may be attributed to the large following of an old Stock Exchange tradition that profits should be taken before Derby Day and open commitments closed. Home railway stocks are not largely affected by these operations, but indirectly an adverse influence is created, and as this particular market at the moment is vulnerable in consequence of the wages discussions, prices have tended to move against holders.

On the 26th and 27th of next month the interim statements will be issued and the market will then be better placed to appraise the dividend prospects of the various stocks. Broadly, current opinion

would appear to regard the junior stocks as fully discounting in their present prices the present prospect of dividends next February. This does not apply, however, to stocks like London Midland & Scottish 1923 preference, London & North Eastern second preference and Southern preferred ordinary. These are regarded as below the level which may reasonably be anticipated when traffic returns show a sustained upward movement and the wages discussions have been settled. In the Stock Exchange it is thought that an agreement about the machinery for discussing such matters would be a prelude to an improvement in the market even if the actual wages question was still open. Debenture and other prior lien stocks were not much affected in price by the late improvement in gilt-edged stocks following the statement regarding the American Debt. In the foreign railway market Argentine railway stocks provided a prominent feature of interest, and the

ordinary stocks of the chief railways were marked up five and six points on a strong demand developing. The arrangements for a new Argentine loan at a rate of interest which will effect a saving in the amount disbursed in sterling are expected to leave a larger amount of exchange available for other purposes. This had an encouraging influence on market views of Argentine railway prospects.

In addition, the sharp rise in the price of wheat attracted attention to the importance of this development to the Argentine railway companies, who are large carriers of wheat and other cereals and would benefit in many ways from a recovery of prosperity in the wheat-growing provinces of Argentina. There was some reaction later in the week on the price of wheat going back. Most of the debenture stocks retained their improvement. Other foreign railway stocks have shown little movement. Indian railway stocks were quiet.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

Railways	Miles open 1933-34	Week Ending	Traffic for Week			Aggregate Traffic to Date			Shares of Stock	Prices				
			Total this year	Inc. or Dec. compared with 1933	No. of Week	Totals		Increase or Decrease		Highest 1933	Lowest 1933	June 6, 1934	Yield % (See Note)	
						This Year	Last Year							
Autofagasta (Chili) & Bolivia	830	2,634	£ 11,830	+ 2,640	22	£ 279,560	£ 209,870	+ 69,690	Ord. Stk.	26	1154	2212	Nil	
Argentine North Eastern	753	2,634	12,200	+ 200	48	503,300	£ 518,400	- 15,100	A. Deb.	1412	5	8	Nil	
Argentine Transandine	111	—	—	—	—	—	—	—	6 p.c. Db.	55	40	50	8	
Bolivar	170	May, 1934	6,600	+ 250	21	33,650	£ 37,150	- 3,500	Bonds	15	11	13	378	
Brazil	—	—	—	—	—	—	—	—	—	—	—	—	—	
Buenos Ayres & Pacific	2,806	2,634	116,000	+ 15,000	48	5,357,000	£ 5,343,000	+ 14,000	Ord. Stk.	26	9716	14	Nil	
Buenos Ayres Central	190	13,534	\$107,000	- \$11,000	46	\$4,899,953	\$4,782,339	+ \$117,614	Mt. Db.	30	10	20	22	
Buenos Ayres Gt. Southern	5,085	2,634	185,000	- 9,000	48	9,671,000	9,841,000	- 170,000	Ord. Stk.	4412	2112	28	Nil	
Buenos Ayres Western	1,926	2,634	35,000	+ 3,000	48	3,274,000	3,279,000	- 5,000	—	3412	1534	23	Nil	
Central Argentine	3,700	2,634	198,000	+ 34,000	48	8,121,000	8,663,000	- 542,000	—	2812	15	19	Nil	
Do.	—	—	—	—	—	—	—	—	Dtd.	18	10	10	Nil	
Cent. Uruguay of M. Video	273	3,634	16,607	+ 419	48	787,757	727,657	+ 60,100	Ord. Stk.	20	8	14	Nil	
Do. Eastern Extn.	311	3,634	3,506	+ 106	48	163,603	157,274	+ 6,329	—	—	—	—	—	
Do. Northern Extn.	185	3,634	2,093	+ 185	48	94,563	—	+ 2,258	—	—	—	—	—	
Do. Western Extn.	211	3,634	1,584	+ 320	48	74,496	63,063	+ 11,433	—	—	—	—	—	
Cordoba Central	1,218	2,634	42,000	+ 4,000	48	1,956,000	1,913,000	+ 43,000	Ord. Inc.	914	212	512	Nil	
Costa Rica	—	—	—	—	—	—	—	—	Stk.	29	20	2612	7916	
Dorada	70	Apr., 1934	9,600	+ 2,800	17	41,100	26,400	+ 14,700	1 Mt. Db.	7612	6854	95	6516	
Entre Rios	810	2,634	16,100	+ 500	48	738,500	715,400	+ 23,100	Ord. Stk.	2612	9	1622	Nil	
Great Western of Brazil	1,082	2,634	5,100	+ 1,400	22	184,400	250,400	- 66,000	Ord. Sh.	2316	12	58	Nil	
International of Cl. Amer.	794	Apr., 1934	\$468,465	+ \$46,901	17	\$1,991,550	\$1,778,384	+ \$213,166	—	—	—	—	—	
Intercoeanic of Mexico	—	—	—	—	—	—	—	—	Ist Pref. Stk.	12	116	12	Nil	
La Guaira & Caracas	2254	May, 1934	3,795	+ 1,485	21	19,040	32,520	- 13,480	—	16	10	882	Nil	
Leopoldina	1,918	2,634	17,502	+ 2,807	22	468,673	504,913	- 36,240	Ord. Stk.	2014	10	1012	Nil	
Mexican	483	31,534	\$282,600	+ \$17,300	21	\$4,945,000	\$3,996,500	+ \$949,000	—	3	12	22	Nil	
Midland of Uruguay	319	May, 1934	8,601	+ 158	47	94,125	94,584	+ 9,584	Ord. Stk.	7816	2	1	122	
Nitrate	401	31,534	8,751	+ 5,693	21	124,139	45,394	+ 78,745	Pr. Li. Stk.	72	1116	278	Nil	
Paraguay Central	274	26,534	4,790	+ 100	47	162,180	135,970	+ 26,210	Pr. Li. Stk.	72	4912	72	8516	
Peruvian Corporation	1,059	May, 1934	62,512	+ 14,349	47	619,408	577,473	+ 41,935	Pref. Stk.	1514	5	1112	Nil	
Salvador	100	2,634	1,288	+ 192	49	73,405	133,820	- 60,415	Ord. Stk.	70	6612	70	716	
San Paulo	—	—	—	—	—	—	—	—	Pr. Li. Db.	102	68	808	5	
Taltal	164	Apr., 1934	4,155	+ 1,965	43	60,935	36,175	+ 24,760	Ord. Sh.	154	54	112	516	
United of Havana	1,365	2,634	14,641	+ 180	48	922,220	918,837	+ 3,383	Ord. Stk.	8	2	5	Nil	
Uruguay Northern	73	May, 1934	1,048	+ 144	47	12,555	15,497	- 2,942	Deb. Stk.	6	312	5	Nil	
Canadian	—	—	—	—	—	—	—	—	—	—	—	—	—	
Canadian National	23,748	21,534	675,477	+ 98,825	20	12,180,392	9,971,611	+ 2,208,781	Perp. Dbs.	—	—	—	—	
Canadian Northern	—	—	—	—	—	—	—	—	4 p.c. Gar.	6012	38	68	516	
Grand Trunk	—	—	—	—	—	—	—	—	Ord. Stk.	9934	85	1018	3116	
Canadian Pacific	17,018	31,534	659,000	+ 96,400	21	9,440,200	8,057,000	+ 1,383,200	—	11	15	Nil	Nil	
India	—	—	—	—	—	—	—	—	—	—	—	—	—	
Assam Bengal	1,329	5,534	24,990	+ 3,603	5	140,842	106,636	+ 34,206	Ord. Stk.	79	70	7812	31516	
Baris Light	202	12,534	4,087	+ 960	6	19,387	19,260	+ 127	Ord. Sh.	10154	70	10012	6	
Bengal & North Western	2,113	12,534	58,279	+ 1,884	6	319,867	319,030	+ 837	Ord. Stk.	292	240	281	3116	
Bengal Dooars & Extension	161	12,534	2,186	+ 252	6	13,318	13,090	+ 227	—	127	119	125	5816	
Bengal-Nagpur	3,269	5,534	120,000	+ 7,171	5	586,350	526,198	+ 60,152	—	—	9714	8312	10112	
Bombay, Baroda & Cl. India	3,089	26,534	197,700	+ 26,925	8	1,378,800	1,341,900	+ 36,900	—	112	107	1112	5816	
Madras & South's Mahratta	3,230	5,534	123,525	+ 11,226	5	590,100	553,047	+ 37,053	—	127	11414	12312	7516	
Rohilkund & Kumaon	572	12,534	10,958	+ 2,084	6	71,105	67,244	+ 3,861	—	260	225	253	516	
South India	2,526	5,534	84,301	+ 5,132	5	402,449	388,157	+ 14,292	—	11912	112	11712	61216	
Beira-Umtali	204	Mar., 1934	49,507	+ 6,256	26	290,974	234,727	+ 56,247	—	—	—	—	—	
Bilbao River & Cantabrian	15	Apr., 1934	1,787	+ 232	17	7,749	5,087	+ 2,662	—	—	—	—	—	
Egyptian Delta	621	20,534	4,864	+ 80	7	25,756	25,867	- 111	Prf. Sh.	13132	154	2	Nil	
Great Southern of Spain	104	26,534	2,863	+ 712	21	46,782	44,916	+ 1,866	Inc. Deb.	4	3	512	Nil	
Kenya & Uganda	1,625	Mar., 1934	240,520	+ 21,064	12	638,137	606,192	+ 31,945	—	—	—	—	—	
Manila	913	Mar., 1934	88,871	+ 21,868	26	530,604	362,535	+ 168,069	B. Deb.	53	3312	4212	814	
Mashonaland	—	—	—	—	—	—	—	—	1 Mg. Db.	9154	42	93	5816	
Midland of W. Australia	277	Apr., 1934	11,826	+ 607	38	134,041	130,844	+ 3,197	Inc. Deb.	89	70	9712	418	
Nigerian	1,903	21,434	28,213	+ 8,403	3	84,523	76,819	+ 7,704	—	—	—	—	—	
Rhodesia	—	1,538	Mar., 1934	154,590	+ 28,180	26	909,844	658,388	+ 251,456	4 p.c. Db.	9812	8054	100	4
South African	—	13,180	12,534	466,043	+ 61,429	6	2,840,855	2,392,870	+ 447,985	—	—	—	—	—
Victorian	—	6,172	Mar., 1934	792,186	+ 58,731	38	6,641,758	7,026,294	- 384,536	—	—	—	—	—
Zafra & Huelva	—	112	Apr., 1934	9,965	+ 97	17	44,640	41,459	+ 3,181	—	—	—	—	—

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1 $\frac{1}{2}$.

† Receipts are calculated at 1s. 6d. to the rupee. ‡ Average rate of exchange for the week:—This year 312 $\frac{1}{2}$. Last year 411 $\frac{1}{2}$. § ex dividend.

